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1991













# GLOSSARY



## MARINE TERMINOLOGY

UNITED STATES COAST GUARD AUXILIARY  
Department of Education



Price \$2



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# **GLOSSARY OF MARINE TERMINOLOGY**





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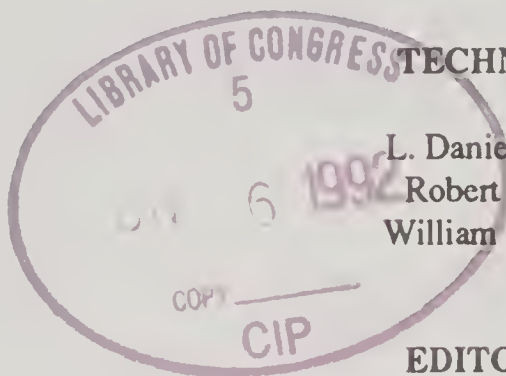
**UNITED STATES COAST GUARD AUXILIARY  
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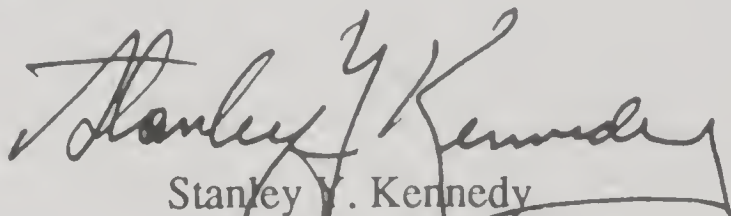
## PREFACE

One author's gybe is another's jibe. Old salts will know the two words are interchangeable, most boaters will not. Since our aim is to educate the boating public, not confuse them, we have created this glossary of the more common nautical terms as a reference tool for members of the Auxiliary and students alike.

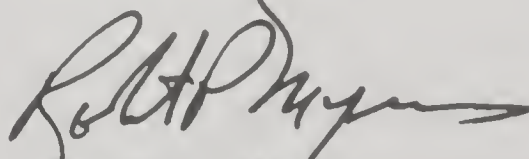
This glossary is intended to be a living document. As older terms fall into disuse; i.e. *parrot perch*—a short spreader or strut on a mast to spread a stay—and new ones become common; i.e. *Jet Ski*—a brand name of the Kawasaki Corporation, commonly used to refer to a personal watercraft, this glossary will be periodically revised.

We have not attempted to include all terminology used in “salt speak,” nor is this document intended to be a nautical dictionary. The nautical terminology used herein are those words and phrases found in our course materials, with the definition(s) appropriate to the context of the course.

We sincerely hope this glossary is helpful to all who may find a use for it.



Stanley Y. Kennedy  
National Commodore



Robert P. Myers  
Department Chief  
Department of Education





## A

**abaft**

Toward the rear (stern) of the boat. Behind.

**abeam**

At right angles to the keel of the boat, but not on the boat.

**aboard**

On or within the boat.

**above deck**

On the deck (not over it -- see ALOFT).

**abreast**

Side by side; by the side of.

**absolute accuracy**

Term often used in connection with loran system to mean the difference between the loran's estimate of position and the actual position. Also called geodetic accuracy. Within the coverage area, the absolute accuracy of loran-C is 0.25 NM or better.

**acquisition**

The reception and identification of transmitted loran-C signals from master and selected secondaries to permit reliable measurement of TDs. The requisite signal-to-noise ratio for original signal acquisition is generally greater than for tracking (qv).

**additional secondary factors**

Land path factors due to variation in the conductivity of the earth's surface that alter the speed of propagation of loran signals over land compared to over water. ASFs degrade the absolute accuracy of a loran system (unless compensated for) but do not affect the repeatable accuracy.

**adrift**

Loose, not on moorings or towline.

**advanced LOP**

A line of position which has been moved forward, parallel to itself, along a course line to obtain a line of position at a later time. If the same procedure is followed to move the line to an earlier time, the LOP is said to be retired.

**aft**

The stern or back of the vessel.

**agger (see double tide)**

**agonic line**

The imaginary line connecting points of zero variation.

**aground**

A vessel touching or fast to the bottom.

**ahead**

In a forward direction.

**Aid To Navigation (ATON or NAV AID)**

Any device external to a vessel or aircraft specifically intended to assist navigators in determining their position or safe course, or to warn them of dangers or obstructions to navigation.

**alee**

Away from the direction of the wind. Opposite of windward.

**align**

To place object in line.

**aloft**

Above the deck of the boat.

**alternating light**

A rhythmic light showing light of alternating colors.

**altocumulus clouds**

“Piled up” clouds at middle altitudes.

**amidships**

The center of the boat with reference to its length or breadth.

**anchor alarm**

Feature of many loran-C receivers that can be set to warn the user that the vessel has moved outside the swing circle of the anchor. This is also termed an anchor watch.

**anchor bend**

A most secure knot for bending a line to an object.

**anchor rode (see rode)****anchor scope (see scope)****anchorage**

A place suitable for anchoring in relation to the wind, seas and bottom; and permitted by regulations.

**anchorage mark**

A navigation mark which indicates an anchorage area or defines its limits.

**anemometer**

A device which measures the velocity of the wind.

**angle of cut**

The smaller angular difference of two bearings or lines of position. See also crossing angle.

**annotation**

Any marking on illustrative material for the purpose of clarification, such as numbers, letters, symbols, or signs.

**annual inequality**

Seasonal variation in the water level or current, more or less periodic, due chiefly to meteorological causes.

**apogean tides or tidal currents**

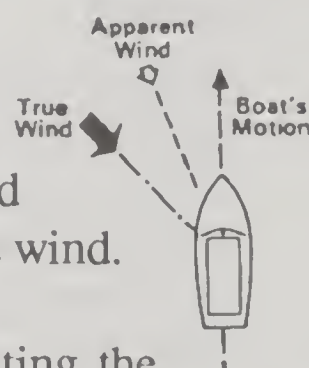
Tides of decreased range or currents of decreased speed occurring monthly as result of the Moon being in apogee (farthest from the Earth).

**apogee**

Point in the lunar cycle when the moon and the earth are farthest apart. Tides have decreased range when the moon is in apogee.

**apparent wind**

The wind perceived in a moving boat which is the resultant of the true wind and the wind of motion and is always forward of the true wind.

**arc measure**

The angle included between radii connecting the ends of an arc with the center of the circle of which it is a part.

**arc of visibility**

The portion of the horizon over which a lighted aid to navigation is visible from seaward.

**armed lead**

A weight which has a hollowed bottom and is filled with tallow, grease, wax, chewing gum, or bedding compound to bring up a sample of the bottom.

**articulated beacon**

A beacon-like buoyant structure, tethered directly to the seabed and having no watch circle. Called articulated light or articulated daybeacon, as appropriate.



# A

## **assigned position**

The latitude and longitude position for an aid to navigation.

## **astern**

Direction of movement, opposite of ahead; toward a vessel's stern.

## **athwartships**

Across or at right angle to the centerline of a boat; rowboat seats are generally placed athwartships (thwarts).

## **aural null**

A null detected by listening for a minimum or the complete absence of an audible signal. This null as received by a radio direction finder indicates that the plane of its loop antenna is perpendicular to the direction of the radio wave.

## **automated notices to mariners system**

Computer system that can be accessed by authorized users to obtain chart corrections and notices to mariners. Users need a teletype, computer terminal, or other device, and an access code available from DMA.

## **autopilot**

Device for automatic steering of a vessel. Depending on the sophistication of the autopilot, these can be used to maintain a heading, or to interface with a loran or other electronic navigation system. Sometimes informally called "George" or "Iron Mike."

## **avast**

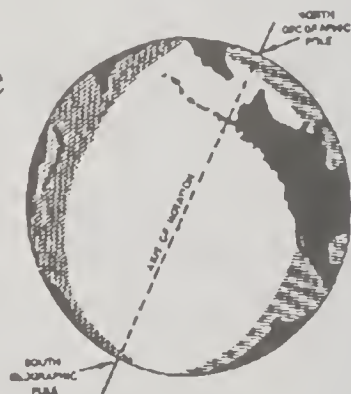
A nautical command to stop.

## **aweigh**

The status of an anchor as it just clears the bottom when being raised.

## **axis of rotation**

The imaginary line connecting the poles of the earth and on which the earth supposedly spins or rotates.



# B

## **back range**

A range observed astern, particularly one used as guidance for a craft moving away from the objects forming the range.

**backstay**

Standing rigging (non movable) that supports the mast from aft to keep it in an upright position. Running backstays (always in pairs) perform the same function, but may be quickly slackened to avoid interfering with the boom.

**backwind**

When wind is deflected from one sail to the lee side of another sail, as when the jib is backwinding the main.

**ballast**

Heavy material placed in the bottom of a boat to improve stability.

**bar**

A ridge or mound of sand, gravel, or other unconsolidated material below the high water level, especially at the mouth of a river or estuary which may obstruct navigation.

**bare poles**

When a sailboat is underway with no sails set.

**bare rock**

A rock that extends above the mean high water datum in tidal areas or above the low water datum in the Great Lakes. See also rock awash, submerged rock.

**barometer**

An instrument for measuring the air pressure.

**baseline**

The segment of a great circle that joins the master and a secondary station in a loran chain.

**baseline extension**

The extension of the baseline beyond the two joined stations. Loran positions in baseline extension areas are problematic and ambiguous.

**batten**

A thin semi-rigid wood or plastic strip inserted in the leach of the sail to provide support for the sail material.

**batten down**

Secure hatches and loose objects both within the hull and on deck.

## bay

A recess in the shore, or an inlet of the sea or lake between two capes or headlands, that may vary greatly in size but is usually smaller than a gulf but larger than a cove.

## beacon

A lighted or unlighted fixed aid to navigation attached directly to the earth's surface. (Lights and daybeacons both constitute "beacons.")

## beam

The greatest width of the boat.

## beam sea

Waves act directly on the vessel's sides (coming from abeam) and, in rough water, could roll some boats over on their side. Commonly known as "in the trough."

## bear

To "bear down" is to approach from windward, to "bear off" is to sail away to leeward; to bear hand is to help out with a task.

## bearing

The horizontal direction of a line of sight between two objects on the surface of the earth.

## beat

To sail to windward, generally in a series of tacks. Beating is one of the three points of sailing, also referred to as sailing "close-hauled" or "by the wind."



## becalmed

Having no wind to provide movement of the boat through the water.

## becket

A looped rope, hook and eye, strap, or grommet used for holding ropes, spars, or oars in position.

## before the wind

Traveling in the same direction toward which the wind is blowing; sailing before the wind is called running.

## belay

To make a line fast, also a command to stop.

## bell

A sound signal producing bell tones by means of a hammer actuated by electricity or, on buoys, by sea motion.



**below**

Beneath or under the deck.

**bend**

To attach a sail to a spar. Also used as a term to describe a knot which fastens one line to another or a line to an object.

**bifurcation**

The point where a channel divides when proceeding from seaward. The place where two tributaries meet.

**bight**

1. A long and gradual bend or recess in the coastline which forms a large open receding bay. 2. A bend in a river or mountain range. 3. A loop or slack part in a rope.

**bilge**

The lowest spaces in a vessel's hull.

**binnacle**

A stand holding the steering compass.

**binocular**

An optical instrument for use with both eyes simultaneously.

**bitt**

A heavy and firmly mounted piece of wood or metal used for securing lines.

**bitter end**

The end of a rope or cable.

**blanket**

To deprive a sail of the wind by interposing another object.

**blink**

An indication that the master or secondary signals in a loran chain are out of tolerance and not to be used. Loran receivers have a blink alarm that warns the user that the indicated positions may not be reliable. Blink conditions warn that the signal power or TD is out-of-tolerance (OOT) and/or that an improper phase code or GRI is being transmitted.

**block**

A wooden or metal case enclosing one or more pulleys and having a hook, eye, or strop by which it may be attached.

**bluff**

A headland or stretch of cliff having a broad nearly perpendicular face. See also cliff.

**boat**

A fairly indefinite term. A waterborne vehicle smaller than a ship. One definition is a small craft carried aboard a ship. Submarines, however, are universally referred to as boats.

**boathook**

A hook or spike at the end of a pole.

**bobbing a light**

Quickly lowering the height of eye several feet and then raising it again when a navigational light is first sighted to determine whether or not the observer is at the geographic range of the light. If he is, the light disappears when the eye is lowered and reappears when it is restored to its original position.

**bollard**

A heavy post set into the edge of a wharf or pier to which the lines of a ship may be made fast.

**bolt holes**

Safe places to anchor or moor in the event that the weather worsens or mechanical difficulties occur.

**bolt rope**

Line attached to the foot and luff of a sail to give it strength or to substitute for sail slides.

**boom**

A spar attached to the mast for extending the foot of the sail.

**boom crotch or crutch**

A notched board or X-shaped frame that supports the main boom and keeps it from swinging when the sail is not raised.

**boomkin**

A short spar or structure projecting from the stern of a vessel to which the mizzen sail is sheeted.

**boom vang**

A tackle running from the boom to the deck which flattens the curve of the sail by pulling downward on the boom.

**boot top**

A painted line that indicates the designed waterline.

**boulder**

A detached water-rounded stone more than 256 millimeters in diameter, i.e., roughly larger than a basketball. See also cobble.

**bow**

The forward part of a boat.

**bow line**

A docking line leading from the bow.

**bow spring line**

A line lead aft from the bow to the pier.

**bowline**

A knot used to form a temporary eye in the end of a line.

**bowsprit**

A spar extending forward from the bow.

**breakwater**

Anything which breaks the force of the sea at a particular place, thus forming protection for vessels. Often an artificial embankment built to protect the entrance to a harbor, or to form an artificial harbor. See also jetty.

**bridge**

The location from which a vessel is steered and is controlled. Also, a structure erected over a depression or an obstacle such as a body of water, railroad, etc. to provide a roadway for vehicles or pedestrians.

**bridle**

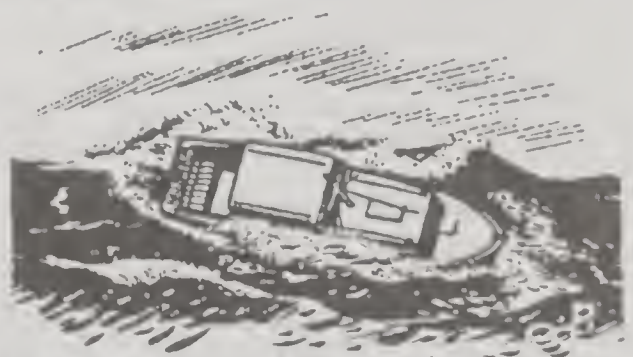
A line or wire secured at both ends in order to distribute a strain between two points.

**brightwork**

Varnished woodwork and/or polished metal.

**broach**

The turning of a boat parallel to the waves, subjecting it to possible capsizing.

**broad on the beam**

At right angles to the keel or centerline. Abeam (not aboard the vessel).

**broad on the bow**

A direction midway between abeam and dead ahead.

**broad on the quarter**

A direction midway between abeam and dead astern.

**broad reach**

Sailing with the apparent wind coming over either quarter.



# B

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## **broadcast notice to mariners**

A radio broadcast designed to provide important marine information.

## **building or house**

One of these terms, as appropriate, is used on nautical charts when the entire structure is a landmark, rather than an individual feature of it.

## **bulkhead**

A transverse, vertical partition separating compartments.

## **bulwark**

The side of a vessel when carried above the level of the main deck.

## **buoy**

A floating object of defined shape and color, which is anchored at a given position and serves as an aid to navigation.

## **buoy system**

IALA Maritime Buoyage System B applies to buoys and beacons that indicate the lateral limits of navigable channels, obstructions, dangers such as wrecks, and other areas or features of importance to the mariner.

## **burdened vessel**

That vessel which, according to the applicable Navigation Rules, must give way to another (privileged) vessel. The terms have been superseded by the terms “give-way” and “stand-on.”

## **burgee**

A small yachting flag which is either swallow-tailed or pointed.

## **by the lee**

Sailing with the wind on the same side as the boom; not a recommended point of sailing as it could cause an accidental jibe.

## **by the wind**

Sailing close hauled, beating.

# C

## **cabin**

A living compartment aboard a vessel.

**cable area**

Area shown on charts transited by submarine cables. Formal anchorage restrictions may apply in cable areas.

**cairn**

A mound of rough stones or concrete, particularly one serving or intended to serve as a *landmark*. The stones are customarily piled in a pyramidal or beehive shape.

**cape**

A relatively extensive land area jutting seaward from a continent, or large island, which prominently marks a change in or interrupts notably the coastal trend.

**capsize**

To turn over.

**carvel**

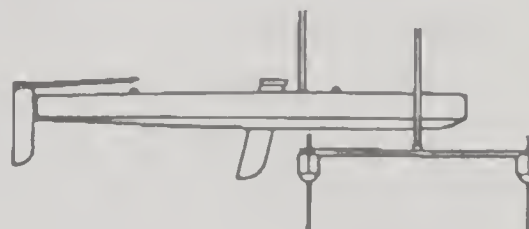
Smooth planked hull construction (see LAPSTRAKE).

**cast off**

To release mooring lines.

**catamaran**

A twin-hulled boat, with hulls side by side.

**catboat**

A sailboat with a single sail attached to a mast stepped well forward.

**caulk**

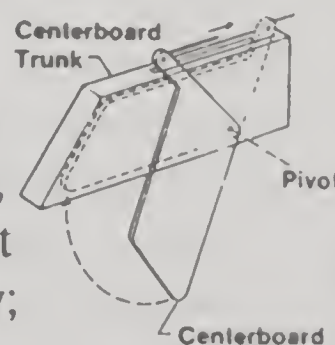
To stop up and make watertight by filling with a waterproof compound or material.

**cavitation**

The rapid building and subsequent explosion of bubbles caused by and interfering with the action of the propeller. Destroys lift, and can actually damage the metal of the propeller and supports.

**centerboard**

A plate, in a vertical fore-and-aft plane, that is pivoted at the lower forward end, and can be lowered or raised through a slot in the bottom of the boat to reduce leeway; movable keel used by sailboats.

**center of effort**

The center of wind pressure on a sail.

## **center of lateral resistance**

The center of underwater resistance which is approximately the center of the boat's underwater profile.

## **chafing gear**

Tubing or cloth wrapping used to protect a line from wear on a rough surface.

## **chain plate**

Metal strap fastened to the side of a boat, to which a stay or shroud is attached.

## **channel**

1. That part of a body of water deep enough for navigation through an area otherwise not suitable. It is usually marked by a single or double line of buoys and sometimes by ranges. 2. The deepest part of a stream, bay, or strait, through which the main current flows. 3. A name given to a large strait, for example, the English Channel.

## **characteristic**

The audible, visual, or electronic signal displayed by an aid to navigation to assist in the identification of an aid to navigation. Characteristic refers to lights, sound signals, racons, radiobeacons, and daybeacons.

## **chart**

A nautical map for use by mariners or aviators, which depicts features and displays information of interest to these groups.

## **Chart NO. 1**

A booklet prepared by the National Ocean Survey which contains symbols and abbreviations that have been approved for use on nautical charts published by the U. S. Government. Past editions of this chart were in actual chart form.

## **chart scale**

The number of distance units on the earth's surface represented by the same distant unit on the chart. Charts are typically partitioned on the basis of scale. Sailing charts have scales of 1:600,000 and greater. General charts have scales between 1:150,000 and 1:600,000. Coast charts have scales between 1:40,000 and 1:150,000. Harbor charts have scales larger than 1:40,000.



**chart symbol**

A character, letter, or similar graphic representation used on a chart to indicate some object, characteristic, etc. May be called map symbol when applied to any map.

**chimney**

A relatively small, upright structure projecting above a building for the conveyance of smoke.

**chine**

The junction of the bottom and sides of a flat or v-bottomed boat.

**chock**

A fitting through which anchor or mooring lines are led. May be open or closed.

**clay** (See mud.)**clear**

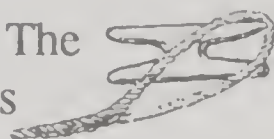
To leave or pass safely, as to clear port or clear a shoal.

**clearing bearing**

British term for danger bearing.

**cleat**

A fitting to which lines are made fast. The classic cleat to which lines are belayed is approximately anvil-shaped.

**clew**

The after, lower corner of a sail to which is attached the sheets.

**cliff**

Land arising abruptly for a considerable distance above the water or surrounding land. See also bluff.

**close aboard**

Not on, but near to, a vessel.

**close-hauled**

Sailing with the boom hauled as close to the centerline of the vessel as is possible, thus sailing as much into the wind as is possible. Also known as beating, or "by the wind"; one of the three points of sailing.

**close reach**

Sailing with the sheets slightly eased and the apparent wind forward of the beam; between close-hauled and a beam reach.

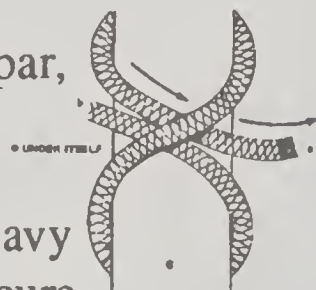


## **closest point of approach**

The closest distance that a target will pass clear of the reference vessel. This distance is estimated from the relative motion plot. The estimated time that this occurs is called the time to closest point of approach (TCPA).

## **clove hitch**

A hitch temporarily fastening a line to a spar, piling, or another line.



## **clutter (radar)**

Unwanted radar echoes reflected from heavy rain, snow, waves, etc., which may obscure relatively large areas on the PPI—and thus targets of interest. Related terms: sea clutter, sea return, rain clutter.

## **coaming**

A vertical piece around the edge of a cockpit, hatch, etc. to prevent water on deck from running below.

## **coastal confluence zone**

A zone extending seaward 50 nautical miles from shore or to the 100 fathom curve, whichever is greater.

## **coastal navigation**

Navigation in coastal (sometimes called pilot) waters, where the opportunity exists to determine or check the vessel's position by reference to navigational aids and observations (by either visual or electronic means) of the coast and its features.

## **cobble (See stone)**

## **cocked hat**

Error triangle formed by lines of position that do not cross at a common point. So named because of the characteristic appearance of these lines in the vicinity of the fix. The size of the cocked hat is an indication of the precision of the fix—and is valuable information to the navigator. For this reason, conservative navigators term a position a fix only if at least three objects are used to determine the fix. Fixes determined only from two LOPs would be relegated to the status of estimated position in this view.

## **cockpit**

An opening in the deck from which the boat is handled.

## **coil**

To lay a line down in circular turns.

**coil down**

To coil a line.

**collar**

The reinforced opening in the deck or cabin roof through which the mast passes. This opening is constructed to take the strain of the mast.

**COLREGS, 72**

The International Regulations for Preventing Collisions at Sea, 1972, commonly called the International Rules.

**coming about**

The changing of course when close-hauled by swinging the bow through the eye of the wind and changing from one tack to another; reverse course or nearly so.

**commissioned**

Specialized term of art to denote the action of placing a previously discontinued aid to navigation back in operation.

**compass card**

Part of a compass, the card is graduated in degrees, to conform with the magnetic meridian-referenced direction system inscribed with direction which remains constant; the vessel turns, not the card.

**compass errors**

Generic term used to describe all compass errors including variation, deviation, northerly turning error, acceleration error, heeling error.

**compass heading**

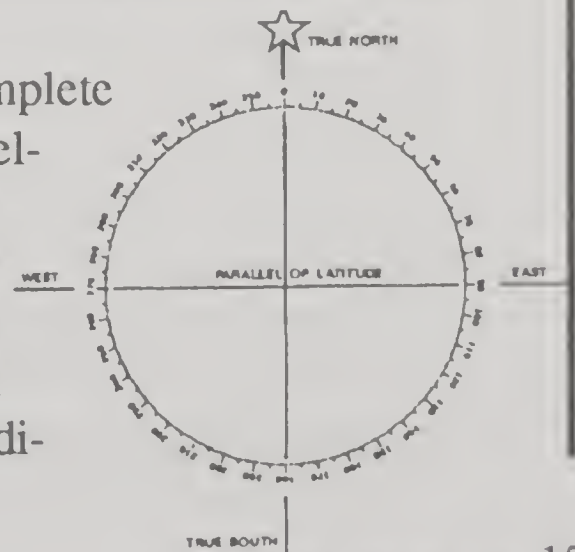
The direction a vessel is heading at any one instant as shown by its compass.

**compass point**

One of 32 points of the compass equal to  $11\frac{1}{4}$  degrees.

**compass rose**

The resulting figure when the complete  $360^\circ$  directional system is developed as a circle with each degree graduated upon it, and with the  $000^\circ$  indicated as true north. Also called true rose. This is printed on nautical charts for determining direction.



True Rose or Compass Rose.

**composite group—flashing light**

A group—flashing light in which the flashes are combined in successive groups of different numbers of flashes.

**composite group—occulting light**

A light similar to a group—occulting light except that the successive groups in a period have different numbers of eclipses.

**conformal projection**

A map or chart projection which preserves correct angular relationships.

**contact**

Any echo detected on the radarscope not evaluated as clutter or as a false echo. The term “contact” is used in a general sense, whereas “target” (q.v.) is used in a more particular sense to denote a contact about which more information (such as CPA, TCPA, course, or speed) is desired. Thus, radar targets would typically be plotted. Of course, the difference is not clear cut—one navigator’s contact might be another’s target.

**contour lines**

Lines that connect equal depth on a nautical chart.

**conventional direction of buoyage**

The general direction taken by the mariner when approaching a harbor, river, estuary, or other waterway from seaward, or proceeding upstream or in the direction of the main stream of flood tide, or in the direction indicated in appropriate nautical documents (normally, following a clockwise direction around land masses).

**coriolis force**

The deflective effect of the earth’s rotation on an object in motion which causes it to divert to the right in the northern hemisphere. (See rotary current.)

**correcting**

Converting a compass heading or a magnetic heading to its equivalent true heading.

**course (C)**

Course is the average heading and the horizontal direction in which a vessel is intended to be steered, expressed as the angular distance relative to north, usually from 000° at north, clockwise through 359° from the point of departure



or start of the course to the point of arrival or other point of intended location.

### **course deviation indicator**

An indicator, shown on some lorans, that graphically displays whether or not the vessel is on course and, if not, the direction to return to course.

### **Course LOP**

An LOP situated approximately directly ahead or behind the vessel, so named because the LOP provides a good indication of the vessel's CMG.

### **Course Made Good (CMG)**

This indicates the single resultant direction from a point of departure to a point of arrival at a given time. (Synonym: Track Made Good)

### **Course of Advance (COA)**

This indicates the direction of the *intended* path to be made good *over the ground*.

### **Course Over Ground (COG)**

This indicates the direction of the path *actually followed* by the vessel *over the ground*, usually an irregular line.

### **cove**

A small sheltered recess or indentation in a shore or coast, generally inside a large embayment.

### **CQR plow**

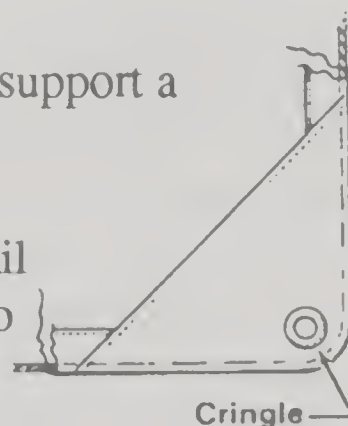
An efficient anchor of British design, is clumsy to handle and stow.

### **cradle**

A framework, generally of wood, to support a boat when it is out of the water.

### **cringle**

A metal or plastic ring sewn into a sail through which a line may be passed to fasten the corner of the sail.



### **cross rate (cross chain)**

#### **interference**

Interference in the reception of radio signals from one loran chain caused by signals from another loran chain.

### **cross track error**

Distance between the vessel's actual position and the direct course between two waypoints.



**cross track error alarm**

Alarm that can be set on many loran—C receivers that warns the navigator if the vessel's cross track error exceeds some pre-specified value.

**crossing angle**

Generally, the angle between two LOPs which determine a fix. The closer the angle is to 90 degrees, the better the fix. Also used with loran LOPs.

**cruiser**

Somewhat more seaworthy craft that usually affords some sort of living quarters.

**cuddy**

A small shelter cabin in a boat.

**cumulus clouds**

Clouds with vertical development.

**cunningham**

A grommated hole in the mainsail luff slightly above the foot through which a line or hook is pulled downward to exert stress on the luff, thereby flattening the sail.

**cupola**

A small dome-shaped tower or turret rising from a building.

**current**

Term used in two senses. It is used to refer either to the horizontal motion over the ground, including ocean current, tidal, and river currents, or more generally to these factors together with the effect of the wind and seas, steering error of the helmsman, compass error, speed curve error, and other factors.

**current (alternate definition)**

Generally, a horizontal movement of water. Currents may be classified as *tidal* and *nontidal*. Tidal currents are caused by gravitational interactions between the Sun, Moon, and the Earth and are a part of the same general movement of the seas that is manifested in the vertical rise and fall, called *tide*. Nontidal currents include the permanent currents in the general circulatory system of the sea as well as temporary currents arising from more pronounced meteorological variability.

### current correction angle

The difference between the intended track and the calculated course to steer to compensate for the estimated current.

### current difference

Difference between the time of slack water (or minimum current) or strength of current in any locality and the time of the corresponding phase of the tidal current at a reference station, for which predictions are given in the *Tidal Current Tables*.

### current drift angle

The difference in angle between the course steered and the resulting CMG in the presence of current.

### current ellipse

A graphic representation of a rotary current in which the velocity of the current at different hours of the tidal cycle is represented by radius vectors and vectorial angles. The cycle is completed in one-half tidal day or in a whole tidal day according to whether the tidal current is of the semidiurnal or the diurnal type. A current of the mixed type will give a curve of two unequal loops each tidal day.

### current sailing

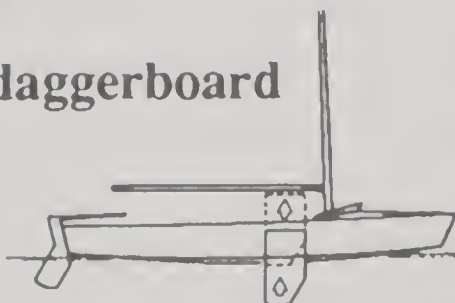
The process of allowing for current in determining the predicted course made good, or in determining the effect of a current on the direction and speed of motion of a boat.

### cutter

A single masted sailboat with the mast stepped further aft than that of a sloop; an all-encompassing term used to describe Coast Guard vessels 65' and above.

## D

### daggerboard



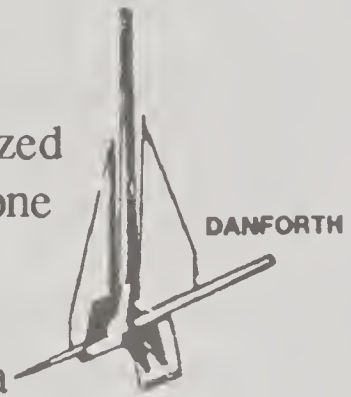
A plate, in a vertical fore-and-aft plane which can be lowered and raised vertically through a slot in the bottom of a boat to reduce leeway.

### dams

Complex structures; allow water to flow to downstream pools in a controlled flow.

**Danforth anchor**

A patented lightweight anchor characterized by long narrow twin flukes pivoted at one end of the relatively long shank.

**danger bearing**

The maximum or minimum bearing of a point for safe passage of an off-lying danger. As a vessel proceeds along a coast, the bearing of a fixed point on shore, such as a lighthouse, is measured frequently. As long as the bearing does not exceed the limit of the predetermined danger bearing, the vessel is on a safe course with respect to the hazard in question.

**danger buoy**

A buoy marking an isolated danger to navigation, such as a rock, shoal or sunken wreck.

**datum**

The technical term for the base line from which a chart's vertical measurements are made—heights of land or landmarks, or depths of water.

**davits**

Mechanical arms extending over the side or stern of a vessel, or over a sea wall, to raise or lower a smaller boat.

**daybeacon**

A fixed NAVAID structure used in shallow waters upon which is placed one or more Daymarks.

**daylight saving time**

A time used during the summer in some localities in which clocks are advanced one hour from the usual standard time.

**daymark**

A signboard attached to a daybeacon to convey navigational information presenting one of several standard shapes (square, triangle, rectangle) and colors (red, green, orange, yellow, or black). Daymarks usually have reflective material indicating the shape, but may also be lighted.

**dead ahead**

A relative bearing of 000 degrees.

**dead astern**

Directly aft.

**dead in the water**

Adrift, floating with the current.



**dead reckoning**

The practice of estimating position by advancing a known position for courses and distance run. The effects of wind and current are not considered in determining a position by dead reckoning.

**dead reckoning plot**

A DR plot is the charted movement of a vessel as determined by dead reckoning.

**dead reckoning (DR) position**

A position determined by dead reckoning.

**deck**

A permanent covering over a compartment, hull or any part thereof.

**demarcation line**

Boundary shown on nautical charts between areas where inland navigation rules and international regulation rules apply.

**departure**

A known location (fix) from which a dead reckoning plot is initiated.

**depth sounder**

An electronic means of measuring water depth by sound waves.

**deviation**

The effect of the vessel's magnetic fields upon a compass. Deviation is the difference between the direction that the compass actually points and the direction that the compass would point if there were no magnetic fields aboard the vessel.

**diaphone**

A sound signal which produces sound by means of a slotted piston moved back and forth by compressed air. A "two-tone" diaphone produces two sequential tones with the second tone of lower pitch.

**dinghy**

A small open boat. A dinghy is often used as a tender for a larger craft.

**direction (true)**

The angle between the local true meridian and a line from the observer's position to an object or another location.



**direction of relative motion**

Determined from the relative motion plot, this is the apparent course of the target as inferred from observations on the radar screen.

**directional light**

A light illuminating a sector or very narrow angle and intended to mark a direction to be followed.

**discontinued**

To remove from operation (permanently or temporarily) a previously authorized aid to navigation.

**discrepancy**

Failure of an aid to navigation to maintain a position or function as prescribed in the *Light List*.

**discrepancy buoy**

An easily transportable buoy used to temporarily replace an aid to navigation that is not watching properly.

**displacement**

The weight of water displaced by a floating vessel, thus, a boat's weight.

**displacement hull**

A type of hull that plows through the water, displacing a weight of water equal to its own weight, even when more power is added.

**distress signal**

MAYDAY, MAYDAY, MAYDAY.

**diurnal**

Having a period or cycle of approximately one tidal day. Thus the tide is said to be diurnal when only one high water and one low water occur during a tidal day, and the tidal current is said to be diurnal when there is a single flood and single ebb period in the tidal day. A rotary current is diurnal if it changes its direction through all points of the compass once each tidal day.

**diurnal inequality**

The difference in height of the two high waters or of the two low waters of each day; also the difference in speed between the two flood tidal currents or the two ebb tidal currents of each day. The difference changes with the declination of the Moon and to a lesser extent with the declination of the Sun.

**dividers**

An instrument consisting of two pointed legs joined by a pivot, and used principally for measuring distances or coordinates. An instrument having one pointed leg and the other carrying a pen or pencil is called a drafting compass.

**dock**

A protected water area in which vessels are moored. The term is often used to denote a pier or a wharf.

**documentation**

A special federal license or registration for a vessel. A vessel of 5 or more net tons, owned by a United States citizen, may be documented as a yacht. The process is administered by the U. S. Coast Guard.

**dolphin**

A minor aid to navigation structure consisting of a number of piles driven into the seabed or riverbed in a circular pattern and drawn together with wire rope.

**dome**

A large, rounded, hemispherical structure rising above a building or a roof of the same shape.

**double ebb**

An ebb tidal current where, after ebb begins, the speed increases to a maximum called *first ebb*; it then decreases, reaching a *minimum ebb* near the middle of the ebb period (and at some places it may actually run in a flood direction for a short period); it then again ebbs to a maximum speed called *second ebb* after which it decreases to slack water.

**double flood**

A flood tidal current where, after flood begins, the speed increases to a maximum called *first flood*; it then decreases, reaching a *minimum flood* near the middle of the flood period (and at some places it may actually run in an ebb direction for a short period); it then again floods to a maximum speed called *second flood* after which it decreases to slack water.

**double sheet bend**

A secure knot used to tie together two lines of unequal diameter.

**double tide**

A double-headed tide; that is, a high water consisting of two maxima of nearly the same height separated by a relatively small depression, or a low water consisting of two minima separated by a relatively small elevation. Sometimes, it is called an *agger*.

**doubling the angle on the bow**

A method of calculating a running fix by measuring the distance a vessel travels on a steady course while the relative bearing (right or left) of a fixed object doubles. The distance from the object at the time of the second bearing is equal to the distance run between bearings, neglecting drift.

**douse**

To lower sails quickly.

**downhaul**

A line attached to the boom at the tack area of the sail in order to pull the luff of the sail downward.

**draft**

The vertical depth from the bottom of the keel to the top of the water.

**drift**

The speed in knots at which the current is moving. Drift may also be indicated in statute miles per hour in some areas, the Great Lakes, for example. The term is also commonly used to mean the speed at which a vessel deviates from the course steered due to the combined effects of external forces such as wind and current.

**Drms**

A term used to describe the statistical accuracy of a loran or other fix. Twice the Drms is a radius of a circle that should include the fix point with at least 95% certainty. The geodetic accuracy limit of the loran-C system within the designated coverage area is that 2Drms should be less than 0.25 nautical miles.

**drogue**

Any device streamed astern to slow a vessel's speed, or to keep its stern to the waves in a following sea.



**drying heights**

Heights above chart sounding datum of those features which are periodically covered and exposed by the rise and fall of the tide.

**dual rate blanking**

To provide continuous service from one loran-C chain to the next, some stations are dual rated (see dual rated). A dual rated station is faced periodically with an impossible requirement to radiate two overlapping pulse groups at the same time. During the time of overlap, the subordinate (secondary) is blanked or suppressed.

**dual rate station**

Term used to describe a master or secondary station in one loran-C chain that is also used as a master or secondary in another chain. The Dana, Indiana, loran transmitter is one example, serving as the zulu secondary in the 9960 (North-east U.S.) chain as well as the master in the 8970 (Great Lakes) chain.

**dumping ground**

Area shown on charts where dumping took place (the practice is no longer permitted) and which may present a hazard to navigation.

**duration of flood and duration of ebb**

*Duration of flood* is the interval of time in which a tidal current is flooding, and the *duration of ebb* is the interval in which it is ebbing.

**duration of rise and duration of fall**

*Duration of rise* is the interval from low water to high water, and the *duration of fall* is the interval from high water to low water.

**Dutchman's log**

A buoyant object thrown overboard to determine the speed of the vessel. The time required for a known length of the vessel to pass the object (assumed to be dead in the water) is measured. Speed can be computed from the two known values of time and distance. The Dutchman's log can also be used to measure the drift of the current if a vessel can be held stationary (keep station) with respect to a fixed object.



**ease off**

To slacken or relieve tension on a line.

**ebb current**

The movement of a tidal current away from shore or down a tidal river or estuary. In the mixed type of reversing tidal current, the terms *greater ebb* and *lesser ebb* are applied respectively to the ebb tidal currents of greater and lesser speed of each day. The terms *maximum ebb* and *minimum ebb* are applied to the maximum and minimum speeds of a current running continuously ebb, the speed alternately increasing and decreasing without coming to a slack or reversing.

**ebb tide**

A receding tide.

**echo**

Term used in radar to denote an object that reflects the radar beam, often used interchangeably with the terms return, target, blip, contact and pip. Properly speaking, however, there are subtle distinctions among these. See, for example, contact.

**eclipse**

An interval of darkness between appearances of a light.

**electronic bearing line**

An adjustable bearing line which appears as a spoke radiating from the center of the PPI. EBLs are used to measure the bearing of a target. Also called electronic bearing marker.

**electronic bearing marker**

See electronic bearing line.

**electronic chart**

A device that can display a chartlike representation on a screen. Some electronic charts are very elaborate and allow the user to “zoom in” to examine an area at a larger scale. Depth contours, NAVAIDS, and other chart features can be displayed—even down to individual docks at certain locations. Electronic charts can interface with other shipboard electronics, such as a loran and display the vessel’s current position, waypoints, and related information.

**emergency light**

A light of reduced intensity displayed by certain aids to navigation when the main light is extinguished.

**Emergency Position Indicating Radio Beacon(EPIRB)**

A device which emits a continuous radio signal alerting authorities to the existence of a distress situation and leading rescuers to the scene.

**endurance**

The time in hours that the vessel can be operated at a given throttle setting until the enroute fuel is exhausted.

**enroute fuel**

Fuel intended for use in a voyage. Numerically the enroute fuel is the fuel on board minus an allowance for a fuel reserve. Also termed voyage fuel.

**ensign**

A national or organizational flag flown aboard a vessel.



USCGAUX  
ENSIGN

**equator**

Great circle formed by passing a plane perpendicular to the axis of rotation of the earth.

**equatorial tidal currents**

Tidal currents occurring semimonthly as the result of the Moon being over the Equator. At these times the tendency of the Moon to produce a diurnal inequality in the tide is at a minimum.

**equitorial tides**

Tides occurring semimonthly as the result of the moon being over the equator. At these times the tendency of the moon to produce a diurnal inequality in the tide is at a minimum.

**establish**

To place an authorized aid to navigation in operation for the first time.

**estimated position (EP)**

An improved position based upon the DR position and which may include, among other things, factoring in the effect of wind and current, a single line of position, or all of the above.

# E

## **even keel**

When a boat is floating on its designed waterline, it is said to be floating on an even keel; not listing to port or starboard, upright.

## **existence doubtful**

Term used principally on charts to indicate the possible existence of a rock, shoal, or other obstruction, for which the actual existence has not been established.

## **extinguished**

A lighted aid to navigation which fails to show a light characteristic.

## **eye bolt**

A bolt having a looped head designed to receive a davit hook or towing line. This bolt is usually bolted through the deck or stem and/or the transom when present.

## **eye of the wind**

The direction from which the wind is blowing.

## **eye splice**

A permanent loop spliced in the end of a line.



# F

## **fair current**

Current moving in the same direction as the vessel.

## **fairlead**

A fitting used to change the direction of a line.

## **faking down**

Laying the line in coils.



## **fall off**

To turn the bow of the boat away from the direction of the oncoming wind.

## **fast**

Said of an object that is secured to another.

## **fathom**

A nautical measure of length, six feet, used for measuring water depth and length of anchor rode.

## **fender**

A cushion, placed between boats, or between a boat and a pier, to prevent damage.



**fiberglass**

Resin reinforced with fibrous glass (or glass reinforced plastic) used in boat construction. Its forms are mat, cloth, woven roving, and chopped strands.

**fid**

A tapered, pointed tool used to separate strands of rope when splicing.

**figure-eight knot**

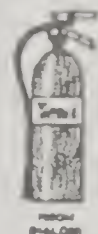
A knot in the form of a figure eight usually tied at the end of a line as a stopper to keep the end of the line from passing through a block or fairlead.

**fin keel**

A thin narrow keel bolted to the bottom of a vessel's hull.

**fire extinguisher**

A device for extinguishing fires. Classified by size and type of fire for which it is designed.

**fisherman's anchor**

A small mushroom anchor sometimes used in protected waters to hold a boat in position briefly.

**fisherman's bend**

A hitch for making fast to a mooring buoy or spar or to the ring of an anchor.

**fix**

A known position determined by passing close aboard an object of known position or determined by the intersection of two or more lines of position (LOPs) adjusted to a common time, determined from terrestrial, electronic, and/or celestial data. The accuracy, or quality of a fix, is of great importance, especially in coastal waters, and is dependent on a number of factors.

**fixed ATON**

An aid to navigation placed on a fixed structure such as a light house, tower, etc.

**fixed bridge**

A bridge that does not lift, swing, or otherwise open for vessel traffic.

**fixed light**

A light showing continuously and steadily, as opposed to a rhythmic light. (Do not confuse with "fixed" as used to differentiate from "floating.")



**fixed range markers**

A series of concentric range rings displayed on a PPI. The spacing of these rings can be adjusted by a range switch, but all FRMs are fixed in relation to each other.

**flag tower**

A scaffold-like tower from which flags are displayed.

**flagpole**

A single staff from which flags are displayed. The term is used when the pole is not attached to a building.

**flagstaff**

A flagpole rising from a building.

**flame arrester**

A safety device on an inboard or inboard-outboard engine, usually made of metal mesh, which prevents an explosion from an exhaust backfire.

**flare**

The outward curve of a vessel's sides near the bow. A pyrotechnic distress signal.

**flash**

A relatively brief appearance of a light, in comparison with the longer interval of darkness in the same character.

**flash tube**

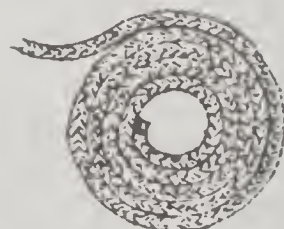
An electronically controlled high-intensity discharge lamp with a very brief flash duration.

**flashing light**

A light in which the total duration of light in each period is clearly shorter than the total duration of darkness and in which the flashes of light are all of equal duration. (Commonly used for a single-flashing light which exhibits only single flashes which are repeated at regular intervals.)

**flemish**

A decorative method of coiling a line flat on the deck or dock.

**float plan**

A document that describes the route(s) and estimated time of arrival of a particular voyage. The float plan generally includes a description of the vessel, radio and safety equipment carried, planned stops, names of passengers, and other pertinent information.

**floating aid to navigation**

A buoy, secured in its assigned position by a mooring.

**flood current**

The movement of a tidal current toward a shore or up a tidal river or estuary. In the mixed type of reversing current, the terms *greater flood* and *lesser flood* are applied respectively to the flood currents of greater and lesser speed of each day. The terms *maximum flood* and *minimum flood* are applied to the maximum and minimum speeds of a flood current, the speed of which alternately increases and decreases without coming to a slack or reversing.

**flood tide**

A rising tide.

**floorboards**

The surface of the cockpit on which the crew stand.

**fluke**

The flat palm-shaped or shovel-shaped part of an anchor which digs in to prevent dragging.

**fluxgate compass**

A compass that senses the earth's magnetic field electronically, rather than with magnets. Fluxgate compasses can interface with other shipboard electronics such as radar or loran.

**fly**

A pennant at the masthead.

**flying bridge**

An added set of controls above the level of the normal control station for better visibility. Usually open but may have a collapsible top for shade.

**fog**

Cloud that forms at or near the earth's surface.

**fog detector**

An electronic device used to automatically determine conditions of visibility which warrant the turning on and off of a sound signal or additional light signals.

**fog signal**

See Sound Signal.

**following sea**

Sea in which the waves move in a direction approximately the same as the vessel's heading. Opposite of head sea.

## foot

The lower edge of a sail.

## fore-and-aft

In a line parallel to the keel.

## forepeak

A compartment in the bow of a vessel.

## foresail

The lower sail set abaft the foremast of a schooner.

## forward

Toward the bow of the boat.

## foul current

Current moving in the opposite direction to the vessel.

## foul ground

An area unsuitable for anchoring due to being strewn with rocks, boulders, coral, or obstructions. Foul grounds are often shown on nautical charts.

## fouled

Any piece of equipment that is jammed or entangled, or dirty.

## founder

When a vessel fills with water and sinks.

## four-stroke engine

An engine whose working cycle involves four strokes of the piston: intake, compression, power, and exhaust.

## freeboard

The minimum vertical distance from the surface of the water to the gunwale cap.

## frequency

The rate at which a cycle is repeated.

## front

The juncture or boundary between two air masses of different temperatures.

## fuel consumption chart

Chart or graph that relates the engine throttle setting, speed through the water, and the fuel burn rate in gallons per hour.

## fuel efficiency

The distance that a vessel can travel on each gallon of fuel. Fuel efficiency is a function of the throttle setting and several other factors.





**fuel reserve**

A quantity of fuel set aside for possible contingencies.

**full and by**

Close-hauled.

**furl**

To fold, gather, or roll up a sail on top of a boom or spar and secure it with small lines.

## G

**gaff**

A spar to support the head of a gaff sail. A hook-like device used to boat a large fish.

**galley**

The kitchen area of a boat.

**gangplank**

The temporary ramp or platform between the vessel and the wharf or pier.

**gangway**

The area of a ship's side where people board and disembark.

**gasket**

A sail stop.

**gear**

A general term for ropes, blocks, tackle and other equipment.

**Geometric Dilution of Precision (GDOP)**

Term used to include all geometric factors (gradient, crossing angle) that degrade the accuracy of position fixes from externally referenced navigation systems, such as loran-C. GDOP can be calculated from an equation which summarizes these effects in one single number.

**gimbals**

A pair of rings pivoted on axes at right angles to each other so that one is free to swing within the other; a ship's compass, etc., will keep a horizontal position when suspended on gimbals.

**give-way vessel**

A term, from the Navigational Rules, used to describe the vessel which must yield in meeting, crossing, or overtaking situations.

**gnomon rod**

A long narrow nail placed vertically through the center of the rose, will cast its shadow on the compass rose.

**gong**

A wave-actuated sound signal on buoys which uses a group of saucer-shaped bells to produce different tones.

**gooseneck**

A universal joint connecting the mast and the boom, allowing movement of the boom in any direction.

**GPS**

Global Positioning System, an electronic navigation system using satellites for world wide coverage.

**grab rails**

Hand-hold fittings mounted on cabin tops and sides for personal safety when moving around the boat.

**gradient**

The ratio of the spacing between adjacent loran TDs, as measured in nautical miles, yards, or feet, and the number of microseconds difference between these lines. Generally speaking, the smaller the gradient, the better the fix.

**grapnel**

A straight shank anchor with four or five curved claw-like arms and no stock; used mostly for recovering lost articles or objects.

**graticule**

The network of lines representing parallels and meridians on a map, chart, or plotting sheet.

**gravel**

See stone.

**great circle**

The circle formed on the earth's surface when a plane is passed through the earth's center.

**great diurnal range**

The difference in height between mean higher high water and mean lower low water. The expression may also be used in its contracted form, *diurnal range*.

**grommet**

A ring or rope of metal used to fasten the edge of a sail to its stay, hold an oar in place, etc.



**ground swell**

See swells.

**ground tackle**

A collective term for the anchor and its associated gear.

**groundwave**

A radio wave that travels near or along the earth's surface.

Groundwave signals are used for the present loran system.

**group flashing light**

A navigational aid light which emits flashes in groups, specified in number, and repeated at regular intervals.

**group occulting light**

An occulting light in which a group of eclipses, specified in number, is regularly repeated.

**group repetition interval**

Length of time (in microseconds) between the start of one transmission from the master station in a loran-C chain and the start of the next. For convenience the GRI is usually divided by 10. Thus, for example, the 9960 GRI Northeast U. S. Chain has a group repetition interval of 99,600 microseconds.

**gudgeon**

The eye supports for the rudder, mounted on the transom and designed to receive the pintles.

**gulf**

That part of an ocean or sea extending into the land, usually larger than a bay.

**Gulf Coast low water datum**

A chart datum. Specifically, the tidal datum formerly designated for the coastal waters of the Gulf Coast of the United States. It was defined as *mean lower low water* when the type of tide was mixed and *mean low water* when the type of tide was diurnal.

**gunwale**

The upper edge of a boat's sides.

## H

**hachures**

Short marks on topographic maps or nautical charts to indicate the slope of the ground or the submarine bottom. These marks usually follow the direction of the slope.



**half hitch**

The simplest kind of hitch; a knot made by passing the end of the rope around the rope and then through the loop just made.

**half-tide level**

See *mean tide level*.

**halyard**

A line or wire used to hoist a spar, sail, or flag.

**hand-bearing compass**

Portable compass (magnetic or electronic) that can be used aboard ship for taking bearings.

**hanks**

Snap hooks which attach the luff of a headsail to the forestay; unit of measurement for small cotton line.

**hard alee**

The operation of putting the helm (tiller) to the lee side of a boat when coming about during a tacking maneuver.

**hard chine**

An abrupt intersection between the hull side and the bottom of a boat.

**hatch**

An opening in a boat's deck fitted with a watertight cover.

**hawser**

A heavy rope or cable used for mooring or towing.

**head**

A marine toilet. Also the upper corner of a triangular sail.

**head sea**

Sea in which the waves move in a direction approximately opposite the vessel's heading. Opposite of following sea.

**header**

A change in wind direction which will head or impede progress in an intended direction.

**heading (HDG)**

The instantaneous direction of a vessel's bow. It is expressed as the angular distance relative to north, usually 000° at north, clockwise through 359°. Heading should not be confused with course. Heading is a constantly changing value as a vessel yaws back and forth across the course due to the effects of sea, wind, and steering error. Heading is

expressed in degrees of either true, magnetic, or compass direction.

**heading flash**

An illuminated radial line on the PPI of a radarscope for indicating the reference ship's heading on the bearing dial. Also called heading marker.

**heading up**

Swinging the bow of a sailing vessel closer to the eye of the wind.

**headsails**

Sails set forward of the foremost mast.

**headway**

The forward motion of a boat through the water. Opposite of sternway.

**heave to**

To bring a vessel up in a position where it will maintain little or no headway, usually with the bow into the wind or nearly so. To stop.

**heavy iron**

Slang expression used to denote large ships.

**heel**

To tip or lean to one side.

**helm**

The wheel or tiller controlling the rudder.

**helmsperson**

The person who steers the boat. (Helmsman is traditional name.)

**high frequency (HF)**

A special frequency band used in long-distance communications.

**high water (HW)**

The maximum height reached by a rising tide. The height may be due solely to the periodic tidal forces or it may have superimposed upon it the effects of prevailing meteorological conditions.

**higher high water (HHW)**

The higher of the two high waters of any tidal day.

**higher low water (HLW)**

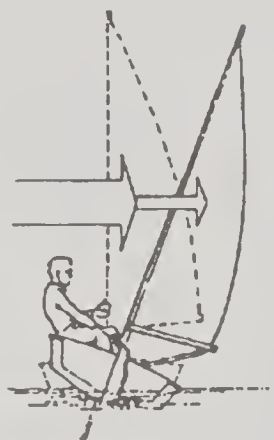
The higher of the two low waters of any tidal day.

## hiking out

The position one assumes when positioned on the weather rail in an effort to balance the heeling forces of the wind upon the sails and/or rigging.

## hiking stick

A short stick attached to the tiller which allows the helmsperson to hike out while steering the boat.



## hitch

A knot used to secure a rope to another object or to another rope.

## hold

A compartment below deck in a large vessel, used solely for carrying cargo.

## hole

A small bay (or channel), particularly in New England.

## homing

Process of moving toward a location by continually pointing the bow of the vessel in the direction of the station. In the absence of current, homing will lead to a ground track that is a straight line. With any current, the ground track will become curved, bowed in the direction of the prevailing current.

## hook

Something resembling a hook in shape, particularly, a. a spit or narrow cape of sand or gravel which turns landward at the outer end; or b. a sharp bend or curve, as in a stream.

## horn

A sound signal which uses electricity or compressed air to vibrate a disc diaphragm.

## horse

The wire or rope bridle to which is attached the block through which the sheet(s) run.

## houseboat

A popular modification of the cruiser, can offer all the conveniences of home.

## HOWGOZIT Chart

Chart that depicts the vessel's actual fuel quantity at various points in a voyage in comparison to the amount of fuel required to reach the destination with various levels of fuel reserves.



**hug**

To remain close to, as to hug the shore.

**hull**

The main body of a vessel.

**hull identification number (HIN)**

A number that includes the Manufacturers ID Code, Hull Serial number, Date of Certification, and model year, displayed on the boat hull.

**hull speed**

The maximum speed of a displacement vessel. It is limited by the length of the vessel and the shape of its underwater construction.

**humidity**

Moisture in the air.

**hurricane**

A large, tropical storm, measuring hundreds of miles in diameter with steady winds in excess of 65 knots. Called a typhoon in the Pacific Ocean. Inland it is a cyclone.

**hydraulic current**

A current in a channel caused by a difference in the surface levels at the two ends. Such a current may be expected in a strait connecting two bodies of water in which the tides differ in time or range.

**hygrometer**

An instrument to measure the humidity.

**hyperbolic grid**

Lattice of curved (hyperbolic) lines of position produced by a hyperbolic system.

**hyperbolic system**

Navigation system, such as loran-C, that operates by measuring the time difference between signals transmitted by two or more transmitters.

## I

**in irons**

Inability to maneuver without placing vessel in jeopardy. Stalled. Said of a sailboat headed into the eye of the wind, with no wind pressure on either side of the sails.

## **I**

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### **inboard-outboard powered**

This arrangement places the engine against the transom. The power drive shaft then exits through a special fitting mounted on the transom.

### **inboard-powered**

When the engine is mounted inside the hull.

### **inclinometer**

Device to measure the angle of roll of a vessel.

### **index diagram**

An inset in a nautical chart where contiguous or related charts at different scales are noted.

### **induction system**

Fuel-air mixture is created by the carburetor and is piped to the intake valves through the intake manifold.

### **initial stability**

A boat's tendency to resist initial heel from the upright position.

### **inoperative**

Sound signal or electronic aid to navigation out of service due to a malfunction.

### **interrupted quick light**

A quick flashing light in which the rapid alternations are interrupted at regular intervals by eclipses of long duration.

### **Intracoastal Waterway (ICW)**

A waterway running parallel to the Atlantic and Gulf Coasts from Manasquan Inlet on the New Jersey shore to the Mexican border.

### **intrusion alarm**

Alarm that can be set on a radar to alert the radar operator that a target has penetrated a range ring.

### **iron jenny**

Slang expression to denote the engine of a sailboat.

### **isogonic lines**

Lines on a chart connecting points of equal magnetic variation.

### **isolated danger mark**

A mark erected on, or moored above or very near, an isolated danger which has navigable water all around it.

**isophase light**

A rhythmic light in which all durations of light and darkness are equal. (Formerly called equal interval light.)

**isthmus**

A narrow strip of land connecting two larger portions of land.

## J

**jet drive**

A special form of an inboard/outboard, since it has an inboard-mounted engine and uses directed thrust.

**jet ski**

A personal watercraft driven by a pump instead of a propeller.

**jetty**

A structure built out into the water to restrain or direct currents, usually to protect a river mouth or harbor entrance from silting, etc.

**jib**

A triangular sail set forward of the mainmast (sloop, cutter, ketch, yawl) or the foremast (schooner).

**jib sheet**

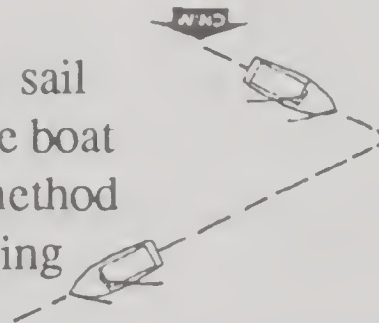
The line, usually paired, controlling the lateral movement of the jib.

**jib stay**

A stay running from the bow to the upper part of the mast on which the jib is attached.

**jibe**

The maneuver of changing the sail (and boom) from one side of the boat to the other. Usually used as a method of changing course while keeping the wind astern.

**jumper**

A stay on the upper forward part of a mast.



**jumper stays**

A wire line which runs over the end of a jumper strut to provide support for the upper portion of a mast above the forestay.

**jumper struts**

A short horizontal spar placed above the union of the forestay and the mast over which a jumper stay runs.

**junction**

The point where a channel divides when proceeding seaward. The place where a tributary departs from the main stream.

## K

**kedge**

To use an anchor to move a boat by hauling on the anchor rode. A small anchor used in light work.

**keel**

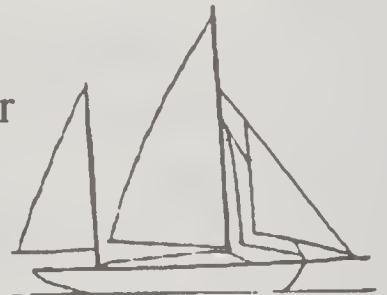
The main structural member of a vessel running fore-and-aft; the backbone of a vessel.

**keel boat**

A boat with a fixed keel as opposed to a boat with a centerboard or daggerboard.

**ketch**

A two-masted sailboat with the smaller after mast (mizzen) stepped ahead of the rudder post.

**“kicking” the stern**

A means of controlling a boat's direction by forcing water from the propeller over the rudder before the boat has gained forward headway.

**knock down**

A boat laid over laterally by wind or sea, allowing water to come in over the gunwales.

**knot (kn sometimes kt)**

A measure of speed equal to one nautical mile (6076 feet) per hour.

**knot**

A fastening made by interweaving rope to form a stopper, to enclose or bind an object, to form a loop or a noose, to tie a small rope to an object, or to tie the ends of two small ropes together.

**ladder**

Stairs or steps aboard a vessel.

**landmark**

A conspicuous artificial feature on land, other than an established aid to navigation which can be used as an aid to navigation. Sometimes also used in a less technical sense to include natural features as well as artificial features.

**lapstrake**

Hull construction of overlapping planks; also known as clinker-built construction (see CARVEL).

**large navigational buoy (LNB)**

Buoys developed to replace lightships and are placed at points where it is impractical to build a lighthouse. The unmanned LNBs are 40 feet in diameter with light towers approximately 40 feet above the water. LNBs are equipped with lights, sound signals, radiobeacons, and racons. LNBs are painted red, not for lateral significance, but to improve visibility.

**lateen rig**

A sailing rig in which the sail is oriented fore-and-aft. A design which originated in the Near East and is still found there. Consists of a triangular (lateen) sail, one side of which is very short, slung from a lateen yard, a long, movable spar which crosses the relatively short mast at the midpoint of the yard and at an angle to the mast. The same rig is often used on sailboards.

**lateral resistance**

That resistance to the leeway or sideways movement of a boat caused by wind or wave forces determined by the amount of heel, keel or centerboard below the water line.

**lateral system**

A system of aids to navigation in which characteristics of buoys and beacons indicate the sides of the channel or route relative to a conventional direction of buoyage (usually upstream).

**latitude**

Distance north or south of the equator expressed in degrees from zero to ninety, north or south; i.e., L 073N.

**lay**

To “lay a mark” is to be able to reach it without tacking. The lay of a line is the direction in which its strands are twisted, usually to the right.

**lazarette**

A storage space in a boat’s stern area.

**lead line**

A line used to measure the depth of the water.

**leading lights**

British terminology for range lights.

**ledge**

On the sea floor, a rocky projection or outcrop.

**lee**

The side sheltered from the wind; the direction toward which the wind is blowing.

**lee helm**

The condition, in a sailing vessel, when the helm must be kept to leeward to hold a boat on her course.

**leeboard**

Pivoted board attached to the side of a sailboat to reduce leeway; usually one on either side, that to leeward being lowered when in use.

**leech**

The after edge of a fore-and-aft sail.

**leeward**

The direction away from the wind. Opposite of windward.

**leeway**

The sideways movement of the boat caused by either wind or current.

**left-handed propeller**

A propeller designed to rotate in a counter-clockwise direction when viewed from aft; often paired with a right-handed propeller on a twin-screw boat.

**leg**

That portion of a voyage track that can be represented by a single course line. A track could be composed of several legs.

**legend**

A title or explanation on a chart, diagram, illustration.

**lifeline**

Lines, usually plastic-covered wire rope, placed alongside



a boat's deck to keep the crew and passengers from falling overboard.

### **lift**

An increase in the wind's force, causing an increase of heel of a boat close-hauled, shifting the center of effort forward, allowing the boat to sail, often advantageously, closer to the wind and faster. Sometimes said of a similarly advantageous shift in wind direction. Being lifted is the opposite of being headed.

### **light**

Lighthouses or beacons, fixed aids to navigation, or a vessel's navigation lights. On a vessel, lights are designed to help identify the size, direction of movement, status of the vessel, and sometimes the tasks being performed.

### ***Light List***

USCG Publication.

### **light sector**

The arc over which a light is visible, described in degrees true, as observed from seaward towards the light. May be used to define distinctive color difference of two adjoining sectors, or an obscured sector.

### **lighted ice buoy (LIB)**

A lighted buoy without sound signal, and designed to withstand the forces of shifting and flowing ice. Used to replace a conventional buoy when that aid to navigation is endangered by ice.

### **lighthouse**

A lighted beacon of major importance.

### **line**

Rope and cordage used aboard a vessel.

### **line of position (LOP)**

A line of bearing to a known origin or reference, upon which a vessel is assumed to be located. An LOP is determined by observation (visual bearing) or measurement (RDF, loran, radar, etc.). An LOP is assumed to be a straight line for visual bearings, or an arc of a circle (radar range), or part of some other curve such as hyperbola (loran). LOPs resulting from visual observations (magnetic bearings) are generally converted to true bearings prior to plotting on a chart.



**line of sight**

The straight line between two points. This line is in the direction of a great circle, but does not follow the curvature of the earth.

**Local Notice to Mariners**

A written document issued by each U. S. Coast Guard district to disseminate important information affecting aids to navigation, dredging, marine construction, special marine activities, and bridge construction on the waterways within that district.

**lockmaster**

A person responsible for lock operations.

**locks**

A means of passing vessels through a dam and, at the same time, raising or lowering them to the level of the next pool.

**log**

A daily record of a ship's progress or operations and messages sent or received on its radio. A device to measure a vessel's speed. To record a ship's progress in a journal.

**longitude**

Distance east or west of the prime meridian expressed in degrees from zero to 180° east or west; i.e., Lo 123W.

**long splice**

A method of joining two ropes without increasing the diameter of the rope. Normally used when line must pass thru a block or over a fairlead without jamming.

**lookout station(watchtower)**

A tower atop a small house used for observation.

**loose-footed**

A sail secured to the boom only at the tack and the clew, as opposed to a sail secured with slides.

**loran**

A contraction of long-range navigation, used to describe an electronic navigation system using a chain of transmitting stations that allows mariners (or aviators) to determine their position.

**loran-C LOP**

Line of position as determined from reception of the loran master signal and that of one secondary. Loran-C LOPs at convenient intervals are plotted on NOAA charts. See also rate.

**loran chain**

Series of three to five transmitting stations consisting of a master station and two to four secondary stations used in the loran system.

**loran linear interpolator**

A small inset diagram shown on loran overprinted charts that enables interpolation of time differences.

**loran pulse**

Basic “building block” of the transmitted loran signal. The loran pulse exhibits a characteristic (and well controlled) waveform which can be identified and timed by a receiver. The loran signal from a master station actually consists of nine pulses. The first eight pulses are spaced 1,000 microseconds apart, followed at an interval of 2,000 microseconds by the ninth pulse. Secondary stations transmit only eight pulses, each separated by 1,000 microseconds. Pulsed transmission saves on the power required for signal transmission and facilitates signal identification. Multiple pulse transmission is used rather than single pulse transmission to increase the average power of the loran signal.

**low water (LW)**

The minimum height reached by a falling tide. The height may be due solely to the periodic tidal forces or it may have superimposed upon it the effects of meteorological conditions. Use of the synonymous term, *low tide*, is discouraged.

**lower high water (LHW)**

The lower of the two high waters of any tidal day.

**lower low water (LLW)**

The lower of the two low waters of any tidal day.

**lower shrouds**

The shrouds which run from the chain plates at the sides of the boat to the mast just beneath the intersection of the spreaders.

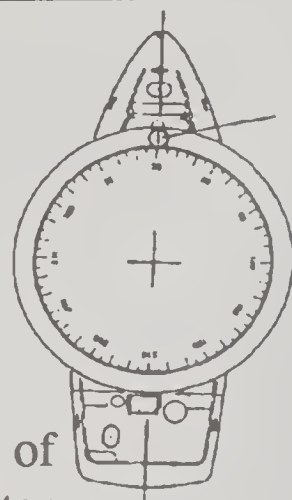
**loxodrome**

Any line on the earth's surface (other than due east or due west) which cuts successive meridians of longitude at the same oblique angle. When extended, it spirals toward, but never reaches, one of the earth's poles.



**lubber's line**

A mark or permanent line on a compass which is used to read the compass heading of a vessel. When properly mounted it is parallel to the vessel's keel.

**luff**

The forward edge of a sail; also the action of heading up into the wind causing the sail to flutter.

**luminous range diagram**

A diagram used to convert the nominal range of a light to its luminous range under existing conditions. The ranges obtained are approximate.

**lunar day**

The duration of one rotation of the earth on its axis, with respect to the moon. Its average length is about 24 hours and 50 minutes.

## M

**magnetic compass**

A magnet, balanced so that it can pivot freely in a horizontal plane; a sailor's most common and most reliable direction-indicating aid.

**magnetic direction (M)**

A direction relative to the earth's magnetic field and magnetic north. Magnetic courses are sometimes labeled with an "M," to signify "magnetic."

**magnetic meridian**

A system of "meridians" passing through the earth's magnetic poles. A compass aligns with these "meridians" if there is no local magnetic field on the vessel to cause deviation.

**mainmast**

The principal mast of a sailboat.

**mainsail**

The principal sail that is set on the mainmast.

**mainsheet**

The sheet controlling the athwartships movement of a mainsail.

**maneuvering board**

A printed compass rose which is used together with parallel rulers and dividers to solve problems of the movement of vessels relative to each other such as those that arise when the vessels change position relative to each other. Used, for example, when another vessel is observed on a radar scope.

**marine engine**

An internal combustion engine, either gasoline or diesel, especially designed or adapted for marine use.

**marine radiotelephone**

VHF-FM radio; an important safety factor in emergencies.

**mark**

A visual aid to navigation. Often called navigation mark, includes floating marks (buoys) and fixed marks (beacons).

**marlinspike**

An iron spike for opening the strands of a rope while splicing.

**marlinspike seamanship**

The art of handling and working all kinds of fiber, synthetic and wire rope; includes every variety of knotting, splicing, worming, parceling, serving, and fancywork.

**masking**

Obscuration of an object. Radar masking (also radar shadow) refers to a phenomenon in which a target is obscured (masked) by virtue of its location behind another larger target—such as a mountain, structure, or other vessel. Visual masking can also occur.

**mast**

A spar set upright to support rigging and sails.

**mast step**

The brace on which, or into which, the heel of the mast rests.

**master station**

Essential component of a loran-C chain. This station broadcasts the signal that is used to identify the chain (the GRI) and is the common base against which all time differences are calculated.

**mayday (MAYDAY is spoken three times)**

A distress signal given to indicate that a mobile station is threatened by grave and imminent danger and requests immediate assistance.

**mean high water (MHW)**

The arithmetic mean of the high water heights observed over a specific 19-year cycle. For stations with shorter series, simultaneous observational comparisons are made with a primary control tide station in order to derive the equivalent of a 19-year value.

**mean higher high water (MHHW)**

The arithmetic mean of the higher high water heights of a mixed tide observed over a specific 19-year cycle. Only the higher high water of each pair of high waters, or the only high water of a tidal day is included in the mean.

**mean low water (MLW)**

A tidal datum. The arithmetic mean of the low water heights observed over a specific 19-year Metonic cycle (the National Tidal Datum Epoch). For stations with shorter series, simultaneous observational comparisons are made with a primary control tide station in order to derive the equivalent of a 19-year value.

**mean low water springs (MLWS)**

Frequently abbreviated *spring low water*. The arithmetic mean of the low water heights occurring at the time of the spring tides observed over a specific 19-year cycle.

**mean lower low water (MLLW)**

The arithmetic mean of the lower low water heights of a mixed tide observed over a specific 19-year cycle. Only the lower low water of each pair of low waters, or the only low water of a tidal day is included in the mean.

**mean range of tide**

The difference in height between mean high water and mean low water.

**mean sea level (MSL)**

The arithmetic mean of hourly water elevations observed over a specific 19-year cycle. Shorter series are specified in the name; e.g., monthly mean sea level and yearly mean sea level.

**mean tide level (MTL)**

Also called half-tide level. A tidal datum midway between mean high water and mean low water.

**mercator projection**

The projection technique most commonly used in naviga-



tional charts; shapes and distances are increasingly distorted as you move into extreme northern and southern areas. This is a cylindrical projection ingeniously modified by expanding the scale at increasing latitudes to preserve ship's direction, and angular relationships.

**meridian** (geographic meridian)

A great circle of the earth passing through both the geographic poles and any given point on the earth's surface.

**meteorological visibility**

The greatest distance at which a black object of suitable dimension could be seen and recognized against the horizon sky by day, or, in the case of night observations, could be seen and recognized if the general illumination were raised to the normal daylight level.

**microsecond**

One millionth of a second.

**midship**

Approximately in the location equally distant from the bow and stern.

**mileage number**

A number assigned to aids to navigation which gives the distance in sailing miles along the river from a reference point to the aid to navigation. The number is used principally in the Mississippi River System.

**mixed tide**

Type of tide with a large inequality in the high and/or low water heights, with two high waters and two low waters usually occurring each tidal day. In strictness, all tides are mixed but the name is usually applied to the tides intermediate to those predominantly semidiurnal and those predominantly diurnal.

**mizzen**

The after and smaller mast of a ketch or yawl; also a sail set on that mast.

**mizzenmast** (see mizzen)

**mooring**

An arrangement for securing a boat to a mooring buoy or a pier; also anchored.

**mooring buoy**

A buoy secured to a permanent anchor sunk deeply into the bottom.

## **mooring pennant**

A line with a large eye spliced in the extreme end which is permanently attached to a mooring buoy and which is used to secure the vessel to the buoy.

## **most probable position**

Vessel's probable position considering all available navigational information. Term is generally used when there is position uncertainty as a result of conflicting or ambiguous information.

## **mud**

A general term applied to mixtures of sediments in water. Where the grains are less than 0.002 millimeter in diameter, the mixture is called clay. Where the grains are between 0.002 and 0.0625 millimeter in diameter, the mixture is called silt. See also sand; stones; rock, definition 2.

## **multiple ranges**

A group of two or more ranges, having one of the range marks in common.

## **mushroom anchor**

A stockless anchor with a cast iron bowl at the end of the shank; used principally in large sizes for permanent moorings.



# N

## **napier diagram**

A graphic plot of the deviation table.

## **nautical chart (see chart)**

## **nautical mile (M)**

One minute of latitude; approximately 6076 feet -- about 1/8 longer than the statute mile of 5280 feet.

## **nautical slide rule**

Analog device for solving time-speed-distance calculations. In present manufacture these are typically circular slide rules with three separate scales graduated in units of time, speed, and distance.

## **navigable waters**

The seas and waters which provide a "road" for transportation between two or more states or to the sea.

## navigation

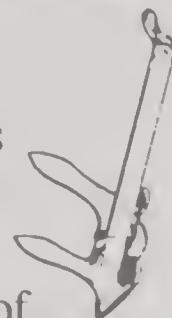
The art and science of conducting a boat safely from one point to another.

## Navigation Rules

Regulations governing the movement of vessels in relation to each other, formerly "Rules of the Road."

## Navy stockless (anchor)

Found principally on large vessels. Because it is stockless, it stows conveniently in hawse pipes.



## neap tides or tidal currents

Tides of decreased range or tidal currents of decreased speed occurring semimonthly as the result of the moon being in quadrature. The *neap range* of the tide is the average semidiurnal range occurring at the time of neap tides.

## neck

1. A narrow isthmus, cape, or promontory.
2. The land between streams flowing into a sound or bay.
3. A narrow strip of land which connects a peninsula with the mainland.
4. A narrow body of water between two larger bodies.

## north geographic pole

A reference for specifying a position on the earth's surface, at the north end of the earth's axis. Also called True North.

## north magnetic pole

The central point of the north end of the earth's magnetic core to which a compass points when it is free of other influences.

## north up

Type of relative motion radar display with own ship at center. This is linked to a gyrocompass or fluxgate compass to display a continuous north-up picture on PPI.

## Northill



This anchor has a stock at the crown instead of at the head. The arm is at right angles to the shank and the broad flukes are set at an angle carefully designed to assure a quick bite and penetration of the bottom.



**notch filters**

Filters in a loran receiver that are either fixed or capable of being tuned to reduce ("notch out") the effects of interfering signals. Some filters (termed "Pac-Man") filters can automatically seek and notch out interfering signals. Typical signals that can cause loran interference are listed in the Loran-C Handbook. The notch filters on a loran should be adjusted for the area of intended cruising to maximize the efficiency of the filtering.

**null**

Position of minimum signal strength for directional antenna. This position occurs when the directional antenna is perpendicular to the radiated signal. The null is used to determine the relative bearing in an RDF set.

**O****oblate spheroid**

Sphere flattened at the poles, resembling a pumpkin.

**occulting light**

A light in which the total duration of light in each period is clearly longer than the total duration of darkness and in which the intervals of darkness (occultations) are all of equal duration. (Commonly used for single-occulting light which exhibits only single occultations which are repeated at regular intervals.)

**ocean data acquisition system (ODAS)**

Certain very large buoys in deep water for the collection of oceanographic and meteorological information. All ODAS buoys are yellow in color and display a yellow light.

**off shore tower**

Monitored light stations built on exposed marine sites to replace lightships.

**off station**

A floating aid to navigation not on its assigned position.

**off the wind**

Sailing downwind (away from the eye of the wind).

**offshore**

In a zone usually considered to lie from the low water mark to three miles from the coast. From the shore, for example,

a wind blowing offshore. Distant from the shore, such as offshore fishing.

**omega**

Electronic navigation system.

**on plane**

As more and more speed is gained, a boat feels as though it has “climbed out of its hole,” and it rides up “on plane.”

**ooze**

A soft, slimy, organic sediment covering part of the ocean bottom.

**out of tolerance**

A condition in which a loran-C signal or time difference exceeds established tolerances. An out-of-tolerance (OOT) condition causes the secondary transmitter to blink.

**outboard**

Toward or beyond the boat's sides, opposite of inboard. A detachable engine mounted on a boat's stern.

**outboard-powered**

The engine is mounted outside the hull on the transom.

**outfall**

The discharge end of a narrow stream, sewer drain, etc.

**outhaul**

A line, or block and tackle, for stretching the foot of a sail out along the boom.

**overboard**

Over the side.

**P**

**painter**

A line attached to the bow of a small boat for use in towing or making fast.

**palisades**

A line of cliffs.

**palm**

A leather fitting placed over the hand to assist in sewing heavy material, such as canvas, with a needle and thread. The broad tip of an anchor fluke.

**pan pan** (spoken three times)

The urgency signal used when the safety of the vessel or person is in jeopardy.

**paraline plotter**

Plotter that has a set of rollers attached to enable the device to be moved parallel to itself, and used for the same purpose as parallel rules.

**parallel of latitude**

Any of the imaginary lines parallel to the equator and representing latitude.

**parallel rules**

An instrument for transferring a line parallel to itself, used in chartwork for drawing and measuring courses or bearings.

**passing light**

A low intensity light which may be mounted on the structure of another light to enable the mariner to keep the latter light in sight when passing out of its beam during transit.

**pay out**

To ease out a line, or let it run in a controlled manner.

**peak**

The upper outer corner of a gaff sail.

**pebble (see stone)****pelorus**

A sighting device, marked off in degrees, used to determine relative bearings.

**peninsula**

A section of land nearly surrounded by water. Frequently, but not necessarily, a peninsula is connected to a larger body of land by a neck or isthmus.

**pennant (sometimes "pendant")**

The line by which a boat is made fast to a mooring buoy. (Sometimes called a "pendant.") A small flag, most frequently a signal flag.

**perigean tides or tidal currents**

Tides of increased range or tidal currents of increased speed occurring monthly as the result of the moon being in perigee or nearest the earth. The *perigean range* (Pn) of tide is the average semidiurnal range occurring at the time of perigean tides.

**perigee**

Point in the lunar cycle when the moon and the earth are



closest together. Tides have increased range when the moon is in perigee.

**period**

The interval of time between the commencement of two identical successive cycles of the characteristic of the light or sound signal.

**Personal Flotation Device (PFD)**

A life preserver which, when properly used, will support a person in the water. Available in several sizes and types.

**phase code interval**

That interval over which the phase code repeats itself. For the loran-C system, phase codes repeat every two GRIs.

**phase coding**

Not discussed in the text, this is a scheme of changing the phase of the pulses in a transmitted loran signal to minimize pulse-to-pulse sky-wave interference and to reject synchronous interfering signals. Master and secondary transmitters use different phase codes for signal identification.

**pier**

A loading or mooring platform extending at an angle (usually a right angle) from the shore.

**pile**

A wood, metal or concrete pole driven into the bottom. Craft may be made fast to a pile; it may be used to support a pier (see piling) or a float.

**piling**

Support, protection for wharves, piers, etc.; constructed of piles (see pile).

**pilot waters**

Areas in which the services of a pilot are recommended or required. Also used in a more general sense to denote waters in which navigation is done using pilotage/piloting.

**piloting**

Piloting is navigation involving frequent or continuous reference to charted landmarks, ATONs, or charted objects, and depth soundings.

**pinch**

To sail a boat too close to the wind, causing the sails to stall.

**pintle**

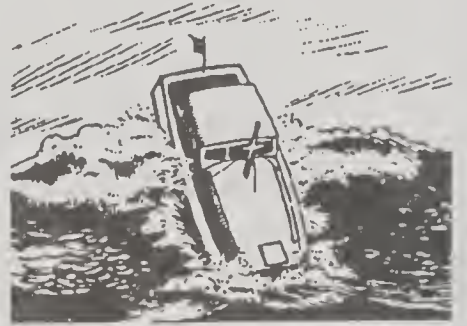
The pin-like fittings on the rudder which serve as pivots when inserted into the gudgeons which are mounted on the transom.

**pitchpoling**

A boat being thrown end-over-end in rough seas.

**pivot point**

A point somewhat aft of the bow, somewhere forward of the midpoint. To an observer on board, a vessel appears to turn about its pivot point.

**plan position indicator (PPI)**

The screen display of a radar, so named because it presents a plan view of the area scanned.

**planing**

A boat is said to be planing when it is essentially moving over the top of the water.

**planing hull**

A type of hull with flat surfaces (not necessarily horizontal) which enable a vessel to climb up its bow wave and to glide across the water when it has attained sufficient speed (see bow wave).

**plotter**

Device for drawing straight lines on a nautical chart, and measuring courses, bearings, and (with some plotters) distances.

**plotting sheet**

A blank chart, usually on the Mercator projection, showing only the graticule and a compass rose. The meridians are usually unlabeled by the publisher so that these can be appropriately labeled when the chart is used in any longitude. Plotting sheets are often used in lieu of charts when the vessel is "off-soundings" (in deep water).

**point**

One of 32 points of the compass equal to  $11\frac{1}{4}$  degrees.

**point of no return**

The point of no return is the point beyond which there is not sufficient fuel on board to return on an out-and-back journey using the entire fuel on board, including the reserve.

**point system**

A nearly obsolete system of dividing a circle into 32 parts of  $11\frac{1}{4}$  degrees each, for reference to direction; i.e., NNW ( $337^{\circ}30'$ ).

**pollution**

The throwing, discharging, or depositing of any refuse matter of any kind (including plastic, trash, garbage, oil, and other liquid or solid substances) into the waters.

**polyconic projection**

A map or chart projection in which the earth is projected on a series of cones concentric with the earth's axis and tangent to the sphere of the earth. Charts of the Great Lakes are typically based on the polyconic projection.

**polyester rope**

A synthetic fiber rope often used for sheets and halyards; aka Dacron, Terylene, etc.

**polypropylene rope**

The least costly of the common synthetic ropes; major advantage is that it floats.

**pooping**

When the following wake breaks over the stern or poop of a boat, and, in some cases, swamps it.

**port**

The left side of a boat looking forward. A harbor.

**port hand mark**

A buoy or beacon which is left to the port hand when proceeding in the "conventional direction of buoyage."

**port tack**

Sailing with the wind coming over the port side of the boat causing the main boom to be on the starboard side.

**position**

On the earth this refers to the actual geographic location of a vessel defined by two parameters called coordinates. Those customarily used are latitude and longitude. Position may also be expressed as a bearing and distance from an object, the position of which is known.

**position approximate**

Term used on nautical charts to denote an inexact position. This term is used principally on charts to indicate that the position of a wreck, shoal, or other obstruction has not been accurately determined or does not remain fixed.

**position doubtful**

Of uncertain position. This term is used principally on charts to indicate that a wreck, shoal, or other obstruction, has been reported in various positions and not definitely determined.



**position line** (see line of position)

**pram**

A small utility boat (8-10' long) with a wide beam relative to its length; used as a tender.

**predictable accuracy**

Term meaning the same as absolute accuracy.

**preferred channel mark**

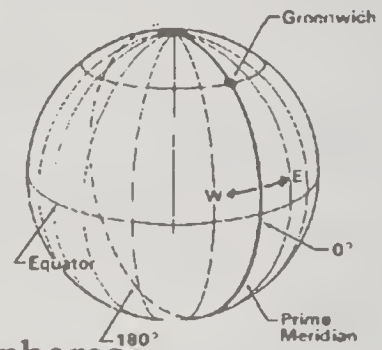
A lateral mark indicating a channel junction or bifurcation, or a wreck or other obstruction which, after consulting a chart, may be passed on either side.

**Primary Aid To Navigation**

An aid to navigation established for the purpose of making landfalls and coastwise passages from headland to headland.

**prime meridian**

The meridian from which longitude is measured both east and west; 0° longitude. It passes through Greenwich, England, and divides the earth into Eastern and Western Hemispheres.



**privileged vessel**

A vessel which, according to the applicable Navigation Rule, has right-of-way (this term has been superseded by the term "stand-on").

**prohibited area**

An area shown on nautical charts within which navigation and/or anchoring is prohibited except as authorized by appropriate authority.

**prolate spheroid**

Sphere flattened at the equator, resembling a football.

**promontory**

High land extending into a large body of water beyond the line of the coast. Called headland when the promontory is comparatively high and has a steep face.

**propeller diameter**

The diameter of the circle circumscribed by the turning blades of a propeller.

**propeller pitch**

The distance a propeller would screw itself forward into the water on a single complete rotation if the water were a solid material and there were no slippage.

**protractor**

An instrument for measuring angles on a surface, such as a chart. Typically a protractor is constructed of transparent plastic and has a semicircular scale measured in degrees.

**prowords**

Oral shorthand of common radio words and phrases.

**puff**

A term used to describe a gust of wind.

**pulse repetition frequency**

The average number of pulses per unit of time.

## Q

**quarter**

The sides of a boat aft of amidships.

**quartering sea**

Sea coming on a boat's quarter.

**quay**

A structure of solid construction along a shore or bank which provides berthing and cargo handling facilities for ships. A similar facility of open construction is called a wharf.

**quick light**

A light more than 50 but less than 80 flashes per minute. (Previously called quick flashing light.)

## R

**race**

A rapid current or a constricted channel in which such current flows.

**racon**

Racons are devices placed on certain buoys or other ATONs to increase the likelihood of detection and aid identification. Racons, when triggered by pulses from a vessel's radar will transmit a coded reply that is displayed on the vessel's PPI. This reply identifies the racon station by exhibiting a series of dots and dashes which appear on the PPI emanating radially from the racon. All racons operate in the marine radar X-Band from 9,300 to 9,500 Mhz. Some "frequency agile" racons also operate in the 2,900 to 3,000 Mhz marine radar S-Band.

**radar**

Self-contained navigation and collision avoidance system consisting of a shipboard transmitter and receiver. The transmitter transmits briefly, then shuts off to permit the receiver to “listen” for the reflected transmission or echo.

**radar bearing**

A bearing obtained with radar.

**radar fix**

A position fix determined by radar alone, or by radar in conjunction with some other method for determining a LOP. Conventionally, radar fixes can be determined by a radar range and bearing from an identified radar conspicuous object, by two ranges from two such objects, or by two bearings from two such objects.

**radar range**

1. A range (distance) obtained with radar. 2. The maximum distance at which a radar set is effective in detecting targets.

**radar reflectors**

Objects that reflect radar waves very well and which serve to increase the size or strength of the radar return. Some buoys, for example, are equipped with a radar reflector to increase the ease of detection and identification. Radar reflectors are also made to carry aboard fiberglass or wood vessels to increase the likelihood of detection by other radar-equipped vessels.

**radar transfer plotting sheet**

Plotting sheet similar to a maneuvering board used for plotting radar targets.

**radio beacons**

Transmitting stations used for RDF system. Marine radio beacons operate in the 285 to 325 kilohertz band. As of this writing there are two types of radio beacons, continuous and sequenced.

**radio direction finding**

Older short-range radio navigation system consisting of a series of land-based stations broadcasting in the LF/MF band and on-board receivers with directional antennas. Use of the directional antenna enables relative bearings to be determined, and, by simple conversion, lines of position.



**radio mast**

A relatively short pole or slender structure for elevating radio antennas, usually found in groups.

**radio navigation**

Determining positions using radio waves of known characteristics emitted from known locations. Forms include LORAN-C, RDF, OMEGA, Satellite systems, etc.

**radio tower**

A tall pole or structure for elevating radio antennas.

**radiobeacon**

An electronic aid to navigation.

**radius of action**

The greatest distance (in an out-and-back voyage) that the vessel can travel and still leave sufficient fuel to return without drawing down the fuel reserve.

**rake**

The slant of a ship's funnels, bow, or stern. The fore-and-aft slant of a vessel's mast.

**range**

The distance in nautical miles that the vessel can travel with the available fuel on board. The range may or may not include an allowance for a fuel reserve. Range is a function of throttle setting and other factors.

**range lights**

Two lights associated to form a range which often, but not necessarily, indicates a channel centerline. The front range light is the lower of the two, and nearer to the mariner using the range. The rear range light is higher and further from the mariner.

**range of tide**

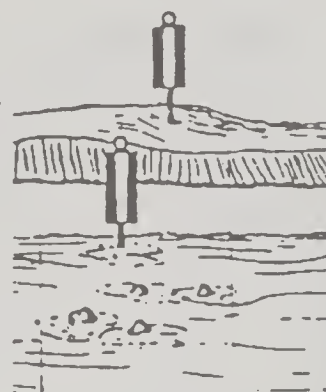
The difference in height between consecutive high and low waters, the *mean range* is the difference in height between mean high water and mean low water. Where the type of tide is diurnal the mean range is the same as the diurnal range.

**range ring**

Circular line on PPI (either fixed or variable) denoting a particular distance from the observer.

**ranges**

A pair of ATONs placed a suitable distance apart, with the far daymark mounted higher than the near one. When the range marks are in line, the vessel is in the channel. Ranges can also be established by any charted objects.

**rate**

Generic term sometimes used to describe a loran-C LOP. Nautical charts, for example, will identify the “rates” shown, e.g., 9960 W, 9960 X, 9960 Y, 9960 Z, 7980 W, etc.

**reach**

The comparatively straight segment of a river or channel between two bends.

**ready about**

The preparatory command given before “hard alee” when tacking (passing the bow through the eye of the wind).

**real time method**

An alternative radar plotting method that provides a rapid means of plotting radar targets.

**rebuilt**

A fixed aid to navigation, previously destroyed, which has been restored as an aid to navigation.

**reciprocal bearing or course**

A bearing or course that differs from the original by 180 degrees.

**reciprocal direction**

Corresponding but reversed direction.

**red sector**

A sector of the circle of visibility of a navigational light in which a red light is exhibited. Such sectors are designated by their limiting bearings, as observed at some point other than the light. Red sectors are often located such that they warn of danger to vessels.

**reef**

An offshore consolidated rock hazard to navigation at a depth of 16 fathoms (30 meters) or less. Also used as a term for a low rocky or coral area some of which is above water. Also, in sailing; to secure its foot when reefed.

**reeve**

To pass a line through a block or other opening.

**reference station**

A tide or current station for which independent daily predictions are given in the *Tide Tables* and *Tidal Current Tables*, and from which corresponding predictions are obtained for subordinate stations by means of differences and ratios.

**regulatory mark**

A white and orange aid to navigation with no lateral significance. Used to indicate a special meaning to the mariner, such as danger, restricted operations, or exclusion area.

**relative (R)**

See relative direction.

**relative direction (bearing)**

A direction relative to the fore-and-aft line of a vessel, expressed in degrees and labeled "R."

**relative motion plot**

Typical plot prepared on a maneuvering board to determine the point of closest approach and time of closest approach of a radar target.

**relighted**

An extinguished aid to navigation returned to its advertised light characteristics.

**repeatable accuracy**

Term used with the loran system to measure the repeatability of the loran TDs or Lat/Lo at a fixed point. Repeatable accuracy is typically much greater than absolute accuracy.

**replaced (temporarily)**

An aid to navigation previously off station, adrift, or missing, restored by another aid to navigation of the same type and characteristics.

**replaced (Temporarily)**

An aid to navigation previously off station, adrift, or missing, restored by another aid to navigation of different type and/or characteristic.

**reset**

A floating aid to navigation previously off station, adrift, or missing, returned to its assigned position (station).



**restricted visibility**

Any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms, or other similar causes.

**reversing current**

A tidal current which flows alternately in approximately opposite directions with a slack water at each reversal of direction. Currents of this type usually occur in rivers and straits where the direction of flow is more or less restricted to certain channels.

**rhumb line**

A line that is formed that spirals around the globe toward the nearer pole when a direction (other than due east or due west) is specified on the surface of the earth, and followed for any distance, so that each subsequent meridian is crossed at the same angle relative to the direction of the pole. Also called loxodrome. This appears as a straight line on a Mercator chart.

**rhythmic light**

A light showing intermittently with a regular periodicity.

**rig**

The arrangement of a boat's sails, masts and rigging.

**rigging**

The general term for all the lines of a vessel.

**right-handed propeller**

A propeller designed to rotate in a clockwise direction (viewed from aft) when driving a boat forward.

**right-of-way**

An obsolete term. Under the 1972 COLREGS, no vessel has the "right-of-way" in a meeting situation, and each is equally responsible for avoiding collision.

**riprap**

Stones or broken rock thrown together without order to provide a revetment.

**roach**

The outward curve at the leech of a sail.

**road**

A open anchorage affording less protection than a harbor. Some protection may be afforded by reefs, shoals, etc. Often used in the plural, e.g., Hampton Roads.

**rock**

1. An isolated rocky formation or single large stone, usually one constituting a danger to navigation. It may be always submerged, always uncovered, or alternately covered and uncovered by the tide. A pinnacle is a sharp-pointed rock rising from the bottom. 2. The naturally occurring material that forms the firm, hard, and solid masses of the ocean floor. Also, rock is a collective term for masses of hard material generally not smaller than 256 millimeters.

**rock awash**

A rock that becomes exposed, or nearly so, between chart sounding datum and mean high water. In the Great Lakes, the rock awash symbol is used on charts for rocks that are awash, or nearly so, at low water datum.

**rode**

An anchor line and/or chain.

**roller furling**

A jib or mainsail rigged to furl by rolling up around its own luff.

**roller reefing**

Reducing sail area by winding it on a rotating boom.

**root mean square (RMS)**

The square root of the arithmetical mean of the squares of a group of numbers.

**rope**

In general, cordage as it is purchased at the store. When it comes aboard a vessel and is put to use it becomes line.

**rotary current**

A tidal current that flows continually, with the direction of flow changing through all points of the compass during the tidal period. Rotary currents are usually found offshore where the direction of flow is not restricted by any barriers. The tendency for the rotation in direction has its origin in the Coriolis force and, unless modified by location conditions, the change is clockwise in the Northern Hemisphere and counterclockwise in the Southern.

**round of bearings**

A group of bearings observed simultaneously, or over a short period of time, such as would be used to determine a visual fix.

# R

## **rudder**

A vertical plate or board which can be pivoted to steer a boat.

## **run**

To allow a line to feed freely.

## **runabout**

A small, sporty craft intended for general use such as day cruising, water skiing, and fishing.

## **running**

Sailing before the wind; sailing with the wind astern.

## **running fix (RFX)**

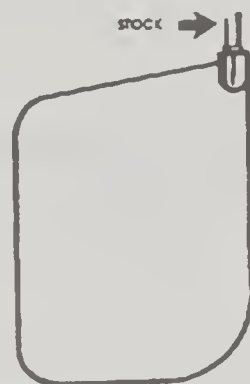
A fix obtained by means of two or more LOPs taken at different times and adjusted to a common time. This practice involves advancing or retiring LOPs.

## **running lights**

Lights required to be shown on boats underway between sundown and sunup; indicates location and orientation of vessel.

## **running rigging**

Sheets, halyards, topping lifts, downhauls, vang, etc., used for raising and adjusting sails (see standing rigging).



# S

## **safety signal-radio**

A radio signal used for messages concerning the safety of navigation or giving important meteorological warnings (pronounced SAY-CURITAY).

## **sail plan**

Form and arrangement of the sails on a sailboat.

## **sail stops**

A short length of line used to wrap around the sail when it is bundled up or furled.

## **sailing free**

Sailing with the wind aft (running).

## **sails**

Flexible vertical airfoils, generally made of cloth, that use wind pressure to propel a boat.

## **samson post**

A single bitt in the bow or stern of a boat, secured to a structural member, usually the keel.



**sand**

Sediment consisting of small but easily distinguishable separate grains between 0.0625 and 2.0 millimeters in diameter. It is called **very fine sand** if the grains are between 0.0625 and 0.125 millimeter in diameter, **fine sand** if between 0.125 and 0.25 millimeters, **medium sand** if between 0.25 and 0.50 millimeters, **coarse sand** if between 0.50 and 1.0 millimeters, and **very coarse sand** if between 1.0 and 2.0 millimeters. See also mud, stones, rock, definition 2.

**SATNAV**

Satellite navigation system.

**Scalar**

A scalar is a quantity that has magnitude only—in contrast to a vector which has both quantity and direction. Velocity, for example, is a vector because, properly speaking, it has both quantity (e.g., 10 knots) and direction (e.g., 045 degrees). Throttle setting, measured in revolutions per minute for example, is a scalar quantity because it has magnitude only.

**scope**

The ratio of the length of anchor line deployed to the depth of the water, including the distance from the vessel's bow to the water.

**screw**

A boat's propeller.

**sculling**

Moving the tiller or an oar back and forth to propel a boat ahead.

**sea anchor**

Any device used to reduce a boat's drift before the wind. Compare with DROGUE.



See Anchor

**sea room**

A safe distance from the shore or other hazards.

**seaman's eye**

Navigation by informal means made possible by thorough familiarity with the area of operations.

**seaworthy**

A boat or a boat's gear able to meet the usual sea conditions.

**secondary coding delay**

Interval in microseconds between the reception of a loran signal at the secondary station and the time when the secondary station transmits a signal in the loran navigation system. Secondary coding delays are published for each secondary station.

**secondary station**

One of the two to four other transmitters in the loran-C chain (designated W, X, Y, and Z) that transmits a signal, keyed in time to that of the master, used to compute a time difference. At one time, the secondary transmitter would transmit (after an interval known as the secondary coding delay) only on receipt of the master signal. Now, the secondary transmitters maintain their own time standard, but the time of transmission relative to the master signal is designed to be the same as before.

**sector** (see light sector)

**secure**

To make fast.

**security** (see safety signal-radio)

**seize**

To bind two lines together with light line.

**semidiurnal**

Having a period or cycle of approximately one-half of a tidal day. The predominating type of tide throughout the world is semidiurnal, with two high waters and two low waters each tidal day. The tidal current is said to be semidiurnal when there are two flood and two ebb periods each day.

**set**

The direction *towards* which the current is flowing expressed in degrees. This term is also commonly used to mean the direction towards which a vessel is being deviated from an intended course by the combined effects of external force such as wind and current.

**set flying**

Said of a sail made fast only at its corners, such as a spinnaker.

**72 COLREGS** (see COLREGS)

**sextant**

Device for precise measurement of horizontal or vertical angles.

**shackle**

A "U" shaped connector with a pin or bolt across the open end.

**sheave**

The grooved wheel or roller in a block (pulley).

**sheer**

The fore-and-aft curvature of the deck as shown in side elevation.

**sheet**

The line used to control the forward or athwartships movement of a sail.

**sheet bend**

A bend used to join two ropes of unequal size. Functionally different from a square knot in that it should be used between lines of different diameters.

**ship**

A larger vessel usually thought of as being used for ocean travel. A vessel able to carry a "boat" on board.

**ship's head up**

Type of relative motion radar display with own ship in center and instantaneous relative bearings of targets displayed.

**shoal**

An offshore hazard to navigation at a depth of 16 fathoms (30 meters) or less, composed of unconsolidated material.

**shoal water**

Shallow water or water over a shoal.

**short legs**

Slang expression to denote a vessel with a limited fuel capacity in relation to its fuel consumption. Opposite: long legs.

**short splice**

A method of permanently joining the ends of two ropes.

**shroud**

The standing rigging that supports the mast at the sides of the boat.



**signal-to-noise ratio (SNR)**

The ratio of the signal strength to that of the electronic noise of a signal. Loran coverage diagrams are calculated so that the SNR is at least 1:3, even though many receivers are capable of processing weaker signals. Signal to noise is sometimes expressed in decibels (DB). The SNR in decibels is mathematically equal to  $20 \log (\text{SNR})$ , so that an SNR of 1:3 works out to approximately -9.54.

**silt** (see mud)

**siren**

A sound signal which uses electricity or compressed air to actuate either a disc or a cup-shaped rotor.

**skeleton tower**

A tower, usually of steel, constructed of heavy corner members and various horizontal and diagonal bracing members.

**skiff**

A utility boat, flat-bottomed with either straight or slightly flared sides.

**skywave**

Skywave is an indirect radio wave that reflects off the ionosphere, rather than traveling a direct path from transmitter to receiver. Because these waves travel a different distance (in particular a longer distance), skywaves will give an erroneous TD reading in a loran receiver. The shape of the loran pulse and phase coding are used to attempt to minimize or eliminate the effects of skywave contamination.

**skywave delay**

The time interval between the arrival of the groundwave and the various skywave reflections. Typically, skywaves can arrive as early as 35 microseconds, or as late as 1,500 microseconds after the groundwave.

**slack**

Not fastened; loose. Also, to loosen. Also the interval of no current movement between ebb and flow.

**slack water**

The state of a tidal current when its speed is near zero, especially the moment when a reversing current changes direction and its speed is zero. The term is also applied to the entire period of low speed near the time of turning of the current when it is too weak to be of any practical impor-

tance in navigation. The relation of the time of slack water to the tidal phases varies in different localities. For standing tidal waves, slack water occurs near the times of high and low water, while for progressive tidal waves, slack water occurs midway between high and low water.

### **slides**

The hardware which attaches either the foot or the luff of the sail to a track on the respective spar.

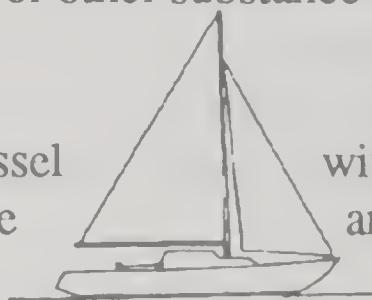
### **slime**

Soft, fine, oozy mud or other substance of similar consistency.

### **sloop**

A single-masted vessel (main and jib) set fore

with working sails and aft.



### **slug**

A fitting which is inserted into a groove on either the mast or the boom providing attachment for either the luff or the foot of the sail respectively.

### **small circle**

Any plane passing through the earth, but not through its center, produces a small circle at its intersection with the earth's surface.

### **snatch block**

A block that opens at the side to allow a line to be inserted or removed without reeving the entire length of line.

### **solar day**

The duration of one rotation of the earth on its axis, with respect to the sun.

### **sole**

Cabin or saloon floor. Timber extensions on the bottom of the rudder. Also the molded fiberglass deck of a cockpit.

### **sound**

A relatively long arm of the sea or ocean forming a channel between an island and a mainland or connecting two larger bodies of water, as a sea and the ocean, or two parts of the same body but usually wider and more extensive than a strait. The term has been applied to many features which do not fit the accepted definition. Many are very large bodies of water, such as Mississippi Sound and Prince William Sound, others are mere salt water ponds or small passages between islands.

**sound signal**

A device which transmits sound, intended to provide information to mariners during periods of restricted visibility and foul weather.

**sounding**

A measurement of the depth of water.

**South Geographic Pole**

A reference for specifying a position on the earth's surface, at the south end of the earth's axis. Also called True South Pole.

**South Magnetic Pole**

The end of the earth's magnetic core opposite the North Magnetic Pole. (Located in Antarctica.)

**spar**

A general term for masts, yards, booms, etc.

**special purpose buoy**

A buoy having no lateral significance used to indicate a special meaning to the mariner, such as one used to mark a quarantine or anchorage area.

**speed (S)**

The rate at which a vessel advances relative to the water over a horizontal distance. When expressed in terms of nautical miles per hour, it is referred to as knots (kn or kt). One knot equals approximately 1.15 statute miles per hour.

**speed curve**

A curve relating the vessel's speed through the water to the engine's throttle setting expressed in revolutions per minute (RPM).

**speed LOP**

An LOP situated at approximately right angles to the intended track, so named because the EP derived from this LOP provides a good indication of the vessel's SMG.

**speed made good (SMG)**

Indicates the overall speed actually accomplished relative to the ground along the course line.

**speed of advance (SOA)**

Indicates the speed *intended* to be made relative to the ground along the track line.

**speed of relative motion**

Apparent speed of the target on a radar display, determined from the relative motion plot.



**speed over the ground (SOG)**

The *actual* speed made good at any instant in time with respect to the ground along the course being steered.

**speed through the water (STW)**

The *apparent* speed indicated by log-type instruments or determined by use of tachometer and speed curve or table, at a particular point in time, along the course line.

**Speed-Time-Distance**

A formula to calculate speed, time, or distance.

**Spherical Coordinate System**

The system used to define positions on the earth's surface.

**spinnaker**

A large, light-weather headsail used for running or reaching.

**spire**

A slender pointed structure extending above a building. It is seldom less than two-thirds of the entire height of the structure, and its lines are rarely broken by stages or other features. The term is not applied to a short pyramid-shaped structure rising from a tower or belfry.

**spit**

A small tongue of land or a long narrow shoal (usually sand) extending from the shore into a body of water.

**splice**

To permanently join two ropes by tucking their strands alternately over and under each other.

**spoil area**

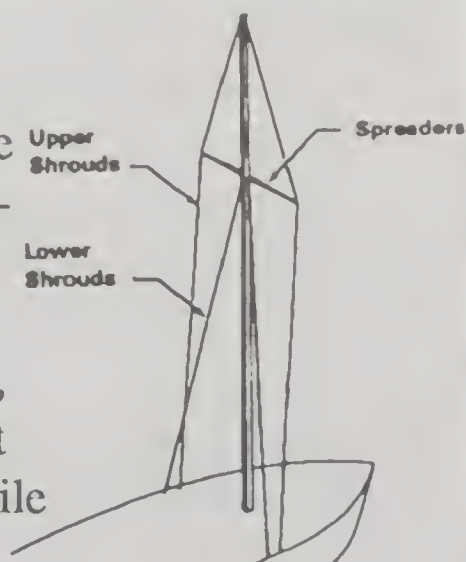
Area used for depositing dredged materials, usually near and parallel to dredged channels. Spoil areas are shown on charts because these may present hazards to navigation for even the smallest craft.

**spreader**

A horizontal strut used to increase the angle at which the shrouds approach the mast.

**spring line**

A fore-and-aft line used in docking, undocking, or to prevent the boat from moving forward or astern while made fast to a dock.



**spring tide or tidal currents**

Tides of increased range or tidal currents of increased speed occurring semimonthly as the result of the moon being new or full. The *spring range* of tide is the average semidiurnal range occurring at the time of spring tides.

**squall**

A sudden, violent wind often accompanied by rain.

**square knot**

A knot used to join two lines of similar size. Also called a reef knot.

**stack**

A tall smokestack or chimney. The term is used when the stack is more prominent as a landmark than accompanying buildings.

**stadimeter**

An instrument for determining the distance to an object of known height by measuring the angle, at the observer, subtended by the object. The instrument is graduated directly in distance.

**stand of tide**

Sometimes called a platform tide. An interval at high or low water when there is no sensible change in the height of the tide. The water level is stationary at high and low water for only an instant, but the change in level near these times is so slow that it is not usually perceptible.

**stand-on vessel**

That vessel which continues its course in the same direction at the same speed during a crossing or overtaking situation, unless a collision appears imminent. (Was formerly called "the privileged vessel.")

**standard time**

A kind of time based upon the transit of the sun over a certain specified meridian, called the *time meridian*, and adopted for use over a considerable area. With a few exceptions, standard time is based upon some meridian which differs by a multiple of 15° from the meridian of Greenwich.

**standardized color coding (charts)**

Standardized colors used to show loran-C lines of position on nautical charts. These color codes for the various

secondaries in the loran chain are W=blue, X=magenta, Y=black, and Z=green.

### **standing part**

That part of a line which is made fast. The main part of a line as distinguished from the bight and the bitter end.

### **standing rigging**

The permanent shrouds and stays that support the mast.

### **standpipe**

A tall cylindrical structure, in a waterworks system, the height of which is several times the diameter.

### **starboard**

The right side of a boat when looking forward.

### **starboard hand mark**

A buoy or beacon which is left to the starboard side when proceeding in the "conventional direction of buoyage."

### **starboard tack**

Sailing with the wind coming over the starboard side of the boat and with the boom out over the port side of the boat.

### **station buoy**

An unlighted buoy set near a Large Navigation Buoy or an important buoy as a reference point should the primary aid to navigation be moved from its assigned position.

### **station pointer** (see three arm protractor)

### **stay**

That part of the standing rigging supporting the mast from forward and aft.

### **staysail**

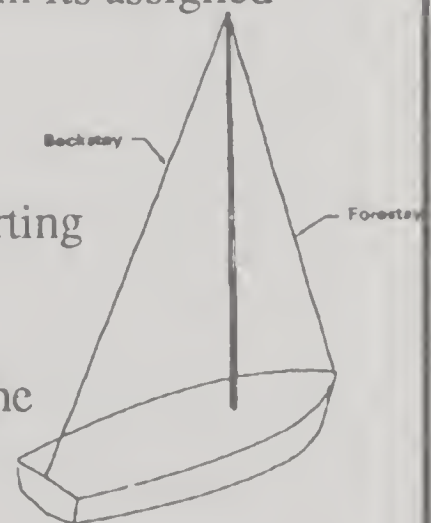
A sail (usually triangular) set on one of the stays.

### **stem**

The foremost upright timber of a vessel to which the keel and ends of the planks are attached. The forwardmost part of the bow.

### **step**

A socket in the bottom of the boat which receives the lower end of the mast.





**stern**

The after part of the boat.

**stern line**

A docking line leading from the stern.

**stock**

The cross bar of an anchor.

**stones**

A general term for rock fragments ranging in size from 2 to 256 millimeters. An individual water rounded stone is called a cobble if between 64 to 256 millimeters, a pebble if between 4 and 64 millimeters, and gravel if between 2 and 4 millimeters. These specialized terms of art are used on nautical charts to describe the quality of the bottom.

**storm anchor**

A third anchor for use in really heavy weather.

**storm sails**

Small sails for heavy weather sailing.

**stow**

To put an item in its proper place.

**strait**

A relatively narrow waterway, usually narrower and less extensive than a sound, connecting two larger bodies of water.

**stratus clouds**

Air masses that are lifted gently and evenly form clouds that are even, flat, and layered.

**strength of current**

Phase of tidal current in which the speed is a maximum; also the speed at this time. Beginning with slack before flood in the period of a reversing tidal current (or minimum before flood in a rotary current), the speed gradually increases to flood strength and then diminishes to slack before ebb (or minimum before ebb in a rotary current), after which the current turns in direction, the speed increases to ebb strength and then diminishes to slack before flood, completing the cycle.

**submerged rock**

A rock covered at the chart sounding datum and considered to be potentially dangerous to navigation. See also bare rock, rock awash.

**subordinate current station**

(1) A current station from which a relatively short series of observations is reduced by comparison with simultaneous observations from a control current station. (2) A station listed in the *Tidal Current Tables* for which predictions are to be obtained by means of differences and ratios applied to the full predictions at a reference station.

**subordinate tide station**

(1) A tide station from which a relatively short series of observations is reduced by comparison with simultaneous observations from a tide station with a relatively long series of observations.—(2) A station listed in the *Tide Tables* for which predictions are to be obtained by means of differences and ratios applied to the full predictions at a reference station.

**supercharging**

A higher performance out of a given-sized engine.

**swamp**

To fill with water, but not settle to the bottom.

**swells**

After the deep water waves are generated far out at sea, they move outward, away from their wind source, in ever-increasing curves, and become swells.

**swing keel**

A weighted extension of the keel which can be partially retracted into the hull or locked in the fully lowered position.

**swing ship**

A systematic procedure for adjusting a compass and/or developing a deviation curve for a compass aboard a vessel.

**syzygy**

Alignment of earth, moon, and sun where the earth, moon and sun are aligned, and the moon and sun are on the same side of the earth. Tides have larger ranges (termed spring tides) when this condition exists.

**T****tabernacle**

A hinged fitting at the base of the mast to enable the mast to be easily raised or lowered.



**tabling**

An extra thickness of cloth sewn around the sail's edges and at the corners.

**tachometer**

An instrument that indicates the speed of the engine measured in revolutions per minute (RPMs).

**tack**

To come about; the lower forward corner of a sail; sailing with the wind on a given side of the boat, as starboard or port tack.

**tacking**

Moving the boat's bow through the wind's eye from close-hauled on one tack to close-hauled on the other tack. Same as coming about.

**tackle**

A combination of blocks and line rigged to increase mechanical advantage.

**tank**

1. A water tank elevated high above the ground by a tall skeletal framework. The expression "gas tank" or "oil tank" is used for the distinctive structures described by these words. 2. Sailing term: A fitting on a spar to which standing rigging is secured.

**target**

Object seen on a radar screen. If the object is known, it is so identified. If not, targets are often given letter designations for plotting purposes, e.g., target alpha, bravo, charlie, delta, etc.

**three-arm protractor**

An instrument consisting essentially of a circle graduated in degrees, to which is attached one fixed arm and two arms pivoted at the center and provided with clamps so that these can be set at any angle to the fixed arm, within the limits of the instrument. It is used for finding a ship's position when the angles between three fixed and known points are measured. Also termed a station pointer.

**thwart**

A seat or brace running laterally across a boat.

**thwartships**

At right angles to the centerline of the boat.



### ***Tidal Current Tables***

Tables which give daily predictions of the times and speeds of the tidal currents. These predictions are usually supplemented by current differences and constants through which additional predictions can be obtained for numerous other places.

### **tidal difference**

Difference in time or height of a high or low water at a subordinate station and at a reference station for which predictions are given in the *Tide Tables*. The difference, when added or subtracted from the prediction at the reference station, gives the corresponding time or tide height for the subordinate station.

### **tide**

The periodic rise and fall of the water resulting from gravitational interactions between the sun, moon, and earth. The vertical component of the particulate motion of a tidal wave.

### ***Tide Tables***

Tables which give daily predictions of the times and heights of high and low waters. These predictions are usually supplemented by tidal differences and constants through which additional predictions can be obtained for numerous other places.

### **tiller**

A bar or handle for turning a boat's rudder or an outboard motor.

### **time difference**

In the loran system, the time difference (in microseconds) between the receipt of the master and secondary signals.

### **time meridian**

A meridian used as a reference for time.

### **time to go (TTG)**

Calculated time until the next waypoint is reached, obtained by dividing the distance to go by the groundspeed.

### **toggles**

Small fittings which allow the turnbuckle to lie in the same straight line as the stay or shroud to which it is fitted. Also, a pin through eye or bight of rope used as a quick release.

**topmark**

One or more relatively small objects of characteristic shape and color placed on an aid to identify its purpose.

**topping lift**

A line used to support the weight of, or to adjust the horizontal set of, a spar such as a boom or a spinnaker pole.

**topsides**

The sides of a vessel between the waterline and the deck. On or above the deck.

**tornado**

A very tight vortex of wind, usually a mile or less in diameter.

**tower**

A structure with its base on the ground and high in proportion to its base, or that part of a structure higher than the rest, but having essentially vertical sides for the greater part of its height.

**track (TR)**

The intended or desired horizontal direction of travel *with respect to the ground*. (Synonym: Intended Track, Trackline.)

**tracking**

Process of moving towards a location by adjusting the heading to compensate for prevailing current so as to travel to the station in a straight line.

**tracking (loran)**

The process of measuring time differences from an acquired master-secondary loran-C pair. The signal-to-noise ratio required for tracking of a preidentified signal is generally less than that required for signal acquisition. For this reason it is sometimes the case that a vessel that has already acquired a loran signal can continue to navigate with this signal although an identical receiver turned on may be unable to acquire the signal.

**transducer**

A device that converts one type of energy to another, as a loudspeaker that changes electrical energy into acoustical energy.

**transit**

British term for range, see range.

**transom**

The stern cross-section of a square-sterned boat.

**traveler**

A device that allows sheets to slide athwartships.

**trawler**

A general term to describe a vessel with a displacement or semi-displacement hull designed for long distance cruising. Trawlers often resemble fishing vessels.

**trim**

Fore and aft balance of a boat.

**tropic currents**

Tidal currents occurring semimonthly when the effect of the moon's maximum declination is greatest. At these times the tendency of the moon to produce a diurnal inequality in the current is at a maximum.

**tropic tides**

Tides occurring semimonthly when the effect of the moon's maximum declination is greatest. At these times there is a tendency for an increase in the diurnal range.

**True North Pole**

The north end of the earth's axis. Also called North Geographic Pole. The direction indicated by 000° (or 360°) on the true compass rose.

**true rose**

The resulting figure when the complete 360° directional system is developed as a circle with each degree graduated upon it, and with the 000° indicated as true north. Also called compass rose.

**True South Pole**

A reference for specifying a position on the earth's surface, at the south end of the earth's axis. Also called South Geographic Pole.

**true wind**

The direction from which the wind is blowing.

**trunk**

The structure which houses the centerboard; also an enclosed passageway.

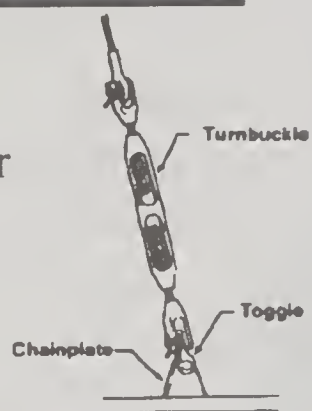


**turnbuckle**

A threaded fitting to pull two eyes together for adjustment of standing rigging.

**turning bearing**

A bearing on a charted object, measured in advance by the navigator, at which the vessel should turn to reach the next leg of the course.

**turning buoy**

A buoy marking a turn, as in a channel.

**twin propellers (screws)**

A boat equipped with two engines.

**two-stroke engine**

Gasoline engine having two working chambers.

**type of tide**

A classification based on characteristic forms of a tide curve. Qualitatively, when the two high waters and two low waters of each tidal day are approximately equal in height, the tide is said to be *semidiurnal*; when there is a relatively large diurnal inequality in the high or low waters or both, it is said to be *mixed*; and when there is only one high water and one low water in each tidal day, it is said to be *diurnal*.

## U

**uncorrecting (a magnetic direction)**

Converting a true direction to equivalent magnetic or compass direction.

**uncovered**

Above water, the opposite of submerged.

**underway**

A vessel not at anchor, made fast to a pier or wharf, or aground.

**Uniform State Waterway Marking System (USWMS)**

A system of marks to supplement the federal system in marking of state waters; a system of regulatory markers to warn a vessel operator of dangers and to provide general information and directions.

**unmanned light**

A light which is operated automatically.

**unreeve**

To run a line completely through and out of a block.

**upper shrouds**

The shrouds which run from the chain plates at the sides of the boat over the spreaders to the masthead.

**urgency signal-radio**

See PAN PAN (pronounced PAHN PAHN).

**utility outboard**

A boat specifically designed for outboard motors.

## V

**V bottom**

A hull with the bottom section in the shape of a "V."

**vang** (see boom vang)**vanishing tide**

In a mixed tide with very large diurnal inequality, the lower high water (or higher low water) frequently becomes indistinct (or vanishes) at time of extreme declinations. During these periods the diurnal tide has such overriding dominance that the semidiurnal tide, although still present, cannot be readily seen on the tide curve.

**variable range marker**

An adjustable range ring in a PPI that can be moved to measure the range of a target.

**variation**

The angular difference between the magnetic meridian and the geographic meridian at a particular location.

**varsol**

A liquid used in the bowl of a compass to damp the card's excessive motion and reduce response to a slower, more readable, gentle rotation and to lubricate the bearing on the pivot.

**vector** (see scalar)**ventilation system**

A system for the purpose of conveying air into each engine and fuel tank compartment and exhausting dangerous vapors out of the vessel.

# V

## **very high frequency radio (VHF)**

Radio frequency of 30 MHz to 300 MHz. The VHF system is essentially a line-of-sight system limited in range to only a little beyond the horizon.

## **vigia**

A rock or shoal of uncertain position or existence. The same term is used to describe a printed warning to that effect.

## **visual aid to navigation**

An aid to navigation which transmits information through its visual observation. It may be lighted or unlighted.

## **visual distress signal (VDS)**

A signal to attract attention and to guide rescuers in a search-and-rescue situation.

## **voyage fuel (see enroute fuel)**

# W

## **wake**

Moving waves, track or path that a boat leaves behind it when moving across the waters.

## **watching properly**

An aid to navigation on its assigned position exhibiting the advertised characteristics in all respects.

## **waterline**

A line painted on a hull which shows the point to which a boat sinks when it is properly trimmed (see BOOT TOP).

## **water tower**

A structure enclosing a tank or standpipe so that the presence of the tank or standpipe may not be apparent.

## **wave height**

The vertical distance between the crest and the trough of a wave.

## **wave length**

The distance between consecutive crests of a wave.

## **wave shape**

The height and length of the wave as it travels.



**way**

Movement of a vessel through the water such as headway, sternway or leeway.

**waypoint**

Arbitrary geographic point entered into a loran set as a reference point for navigational calculations. Typically voyages are organized into a series of waypoints marking the legs of the trip.

**waypoint sequencing (route option)**

A feature incorporated into many loran receivers that allows an operator to store a sequence of waypoints in the loran's memory to describe a route. In this mode, whenever the vessel arrives at a waypoint the next waypoint in a prestored route sequence automatically appears on the display screen.

**weather helm**

The tendency of a boat to turn into the wind when its rudder is set amidships.

**weather side**

Windward side of a boat.

**weighing anchor**

Raising the anchor when preparing to get underway.

**wharf**

A man-made structure bounding the edge of a dock and built along or at an angle to the shoreline, used for loading, unloading, or tying up vessels.

**wheel**

A circular frame with an axle attached to the rudder of a vessel used for steering. Also a slang expression for a propeller.

**whipping**

The act of wrapping the end of a piece of rope to prevent it from fraying.

**whisker pole**

A spar used to extend the jib when running.

**whistle**

A wave-actuated sound signal on buoys which produces sound by emitting compressed air through a circumferential slot into a cylindrical bell chamber.

## **white water**

Foaming, whitish water, as in whitecaps, rapids, etc. A light-colored water over a shallow area.

## **winch**

A device to increase hauling power when raising or trimming sails.

## **wind of motion**

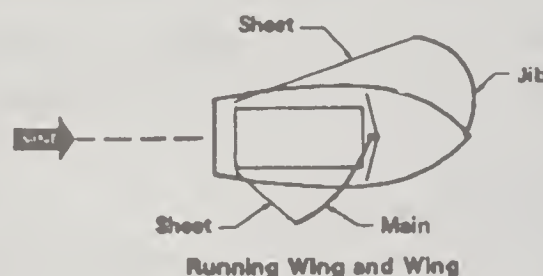
That wind which is perceived on a boat as the result of the movement of the boat itself.

## **windward**

Toward the direction from which the wind is coming.

## **wing and wing**

Running with the mainsail set on one side of the boat and the jib set on the other side.



## **wing dam**

A dam constructed to maintain a clear channel and control the random meandering of sandbars.

## **winter light**

A light which is maintained during those winter months when the regular light is extinguished, it is of lower candlepower than the regular light but usually of the same characteristic.

## **winter marker**

An unlighted buoy without sound signal, used to replace a conventional buoy when that aid to navigation is endangered by ice.

## **withdrawn**

The discontinuance of a floating aid to navigation during severe ice conditions or for the winter season.

## **working sails**

Sails for use under normal conditions; on a sloop, the mainsail and jib.

## **wreck**

The ruined remains of a vessel which has been rendered useless, usually by violent action, as by the action of the sea and weather on a stranded or sunken vessel. In hydrography the term is limited to a wrecked vessel, either submerged or

visible, which is attached to or foul of the bottom or cast up on the shore.

## wreck buoy

A buoy marking the position of a wreck. It is usually placed on the seaward or channel side of the wreck and as near to the wreck as conditions will permit. To avoid confusion in some situations, two buoys may be used to mark the wreck. The possibility of the wreck having shifted position due to sea action between the times the buoy was established and later checked or serviced should not be overlooked. Also called wreck-marking buoy.

## Y

### yachtsman's anchor

The plane of the stock is perpendicular to that of the arm and the stock is at the head; it has a sharp bill for good penetration of the bottom; and the fluke is diamond-shaped to permit the cable to slip past it without fouling.



### yaw

To swing off course, as when due to the impact of a following or quartering sea.

### yawl

A two-masted sailboat with the small mizzen mast stepped abaft the rudder post.

## Z

### zeroing-in

Approaching a point or object by use of successive approximations such as in tacking.



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# Selected Symbols, Acronyms & Abbreviations of U. S. Coast Guard Auxiliary


## A

ABAND ..... Abandoned  
 ABYC ..... American Boat  
                     and Yacht Coun-  
                     cil  
 ACN ..... *Advanced Coastal*  
                     *Navigation*  
 ACU ..... Auxiliary Com-  
                     munications Unit  
 ADF ..... Automatic Direc-  
                     tion Finder  
 ADM ..... Admiral  
 ADSO ..... Assistant District  
                     Staff Officer  
 AFTN ..... Aeronautical  
                     Fixed Telecom-  
                     munications Net-  
                     work  
 AIDE ..... Aide to National  
                     Commodore/District  
                     Commodore  
 AIM ..... Academy Intro-  
                     duction Mission  
 AI ..... Alternating  
 AM ..... Amplitude Modu-  
                     lation  
 AMOS ..... Auxiliary Mission  
                     Objectives System  
 ANMS ..... Automated Notice  
                     to Mariner's Sys-  
                     tem

ANRC ..... American National  
                     Red Cross  
 ANS ..... Auxiliary National  
                     Store  
 ANSC ..... Auxiliary National  
                     Supply Center  
 ASST ..... Assistant  
 ASF ..... Additional Second-  
                     ary Factor  
 ATA ..... Actual Time of Ar-  
                     rival  
 ATD ..... Actual Time of De-  
                     parture  
 ATE ..... Actual Time Enroute  
 ATON ..... Aids to Navigation  
 AUTODIN .. Automated Digital  
                     Network  
 AUXFAC ... Auxiliary Facility  
 AUXLAM .. Auxiliary Leadership  
                     & Management  
                     Course  
 AUXMIN ... Auxiliary Adminis-  
                     tration Specialty  
                     Course  
 AUXMIS .... Auxiliary Manage-  
                     ment Information  
                     System  
 AUXOP ..... A designation for a  
                     member completing  
                     the seven Auxiliary  
                     specialty courses.  
 AX ..... AUXOP



## B


**BA** ..... Branch Assistant  
**BC** ..... Branch Chief  
**BCN** ..... *Basic Coastal Navigation*  
**BC-NCD** .... Branch Chief, Conference Registration, National Commodore's Staff  
**BC-NCO** .... Branch Chief, Conference Organization, National Commodore's Staff  
**BC-NCP** .... Branch Chief, Conference Planning  
**BC-NCR** .... Branch Chief, Conference Review  
**BC-NCS** .... Branch Chief, Conference Support  
**BCQ** ..... Boat Crew Qualification  
**BED** ..... Base Enrollment Date  
**BG** ..... Brigadier General (USA)  
**BIA** ..... Boating Industry Associations  
**bl** ..... Blast  
**Blds** ..... Boulders  
**BOAT-US** .. Boat Owners Association of U. S.   
**BOCA** ..... Boat Owners Council of America  
**BOS** ..... Boating Safety  
**BOSAF** ..... Boating Safety Correspondence Course  
**BOSDET** ... Boating Safety Detachment  
**BOSTEAM** Boating Safety Team

**BQ** ..... Basically Qualified  
**brg** ..... Bearing  
**BRIGEN** .... Brigadier General (USAF, USMC)  
**BS&S** ..... *Boating Skills and Seamanship*  
**BSAC** ..... Boating Safety Advisory Council (NBSAC)  
**BSC** ..... Boating Safety Circular  
**BY** ..... Buoy  
**BYBB** ..... Backyard Boat Builders

## C

**C** ..... Can  
**C** ..... Canadian  
**C** ..... Compass  
**C** ..... Course  
**CANCON** .. Central Area National Conference  
**CAP** ..... Civil Administrative Penalties or ..... Civil Air Patrol  
**CAPT** ..... Captain (USCG, USN)  
**CB** ..... Citizen's Band Radio  
**CBDR** ..... Constant Bearing Decreased Range  
**CC** ..... Career Candidate  
**CCA** ..... Current Correction Angle  
**CDA** ..... Current Drift Angle  
**CDI** ..... Course Deviation Indicator  
**CDMVT** .... Compass, Deviation, Magnetic, Variation, True



**CDR** ..... Commander  
**CFR** ..... Code of Federal Regulations  
**CG** ..... Coast Guard  
**CGAUX** .... Coast Guard Auxiliary  
**CH** ..... Channel  
**CHDIRAUX**  
 ..... Chief Director, Auxiliary (Headquarters)  
**CI** ..... Communications Inspector  
**CM** ..... Communications  
**CMC** ..... Merchant Marine Safety Counsel  
**CME** ..... Courtesy Marine Examination   
**CMG** ..... Course Made Good  
**COA** ..... Course of Advance  
**COG** ..... Course Over Ground  
**COL** ..... Colonel  
**COLREGS** Collision Regulations (NAVRULES)  
**COM** ..... Committee  
**COMDTINST**  
 ..... Commandant Instruction  
**COMMO** ... Commodore  
**COP** ..... Circle of Position  
**CPA** ..... Closest Point of Approach  
**CPO** ..... Chief Petty Officer  
**CPT** ..... Captain (USA, USAF)  
**CRC** ..... Civil Rights Counselor  
**Cup** ..... Cupola

**CWO** ..... Chief Warrant Officer  
**cy, cl** ..... Clay

## D

**D** ..... Distance  
**D** ..... Doubtful  
**D** ..... Drift (not preferred)  
**D-AA** ..... Administrative Assistant to District Commodore  
**D-AD** ..... District Commodore's Aide  
**DBD** ..... Dayboard  
**DBN** ..... Daybeacon  
**DC-A** ..... Department Chief-Public Affairs  
**DC-E** ..... Department Chief-Education  
**DC-F** ..... Department Chief-Comptroller  
**DC-I** ..... Department Chief-Information Systems  
**DC-L** ..... Department Chief-Legal Affairs  
**DC-M** ..... Department Chief-Member Resources  
**DC-O** ..... Department Chief-Operations  
**DC-T** ..... Department Chief-Training  
**DC-V** ..... Department Chief-Vessel Examination  
**DCO** ..... District Commodore  
**DCO-AA** .... Administrative Assistant to District Commodore  
**DCO-AD** .... Aide to District Commodore  
**DCP** ..... Division Captain

**DEP** ..... Deputy, Departure  
**dev** ..... Deviation  
**DF** ..... Direction Finding  
**Dft** ..... Drift (preferred)  
**DIRAUX** ... Director of Auxiliary  
                   (District or Region)  
**DISC** ..... Discontinued  
**DIST** ..... District  
**DIV** ..... Division  
**DIW** ..... Dead in the Water  
**DMA** ..... Defense Mapping  
                   Agency  
**DMAHTC** . Defense Mapping  
                   Agency, Hydro-  
                   graphic, Topographic  
                   Center  
**DOT** ..... Department of Trans-  
                   portation  
**DR** ..... Dead Reckoning  
**DRM** ..... Direction of Relative  
                   Motion  
**DSO** ..... District Staff Officer  
**DVC** ..... Division Chief  
**DVC-NC** ... Division Chief, Con-  
                   ference Coordina-  
                   tion, National Com-  
                   modore's Staff

## E

**E** ..... East  
**E** ..... Estimated  
**EANCON** .. Eastern Area Na-  
                   tional Conference  
**EBL** ..... Electronic Bearing  
                   Line  
**EBM** ..... Electronic Bearing  
                   Marker  
**ec** ..... Eclipse  
**ED** ..... Existence Doubtful  
**EDT** ..... Eastern Daylight  
                   Time

## EMER CHAR

                  ..... Emergency Charac-  
                   teristics  
**ENR** ..... Enroute  
**ENS** ..... Ensign  
**EP** ..... Estimated Position  
**EPIRB** ..... Emergency Position  
                   Indicating Radio  
                   Beacon  
**EST** ..... Eastern Standard  
                   Time  
**ETA** ..... Estimated Time of  
                   Arrival  
**ETD** ..... Estimated Time of  
                   Departure  
**ETE** ..... Estimated Time  
                   Enroute  
**ev** ..... Every  
**EXCOM** ... District Executive  
                   Committee

## F

**F** ..... Flashing  
**F1(2)** ..... Group flashing  
**FAA** ..... Federal Aviation Ad-  
                   ministration  
**FAR** ..... Federal Aviation  
                   Regulations  
**FC** ..... Flotilla Commander  
**FED** ..... Flotilla Enrollment  
                   Date  
**1LT** ..... First Lieutenant,  
                   (USA)  
**1stLT** ..... First Lieutenant  
                   (USAF, USMC)  
**fl** ..... Flash  
**Fl** ..... Flashing  
**FM** ..... Frequency Modula-  
                   tion  
**FN** ..... Finance

## FOG SIG INOP

..... Sound Signal Inoperative

FRM ..... Fixed Range Marker

FS ..... Fog signal

FSO ..... Flotilla Staff Officer

FWPCA ..... Federal Water Pollution Control Act

## G

G ..... Gravel

G ..... Green

G-N ..... Navigation Safety & Waterway Services

G-NAB ..... Auxiliary, Boating, and Consumer Affairs Division

G-NAB-1 ... Auxiliary Administration Branch

G-NAB-2 ... Boating Operations Branch

G-NAB-3 ... Boating Education Branch

G-NAB-4 ... State Affairs Branch

G-NAB-5 ... Consumer & Regulatory Affairs Branch

GAWR ..... Gross Axle Weight Rating

GDOP ..... Geometric Dilution of Position

GEN ..... General

GpFl ..... Group Flashing

GPH ..... Gallons Per Hour

GPO ..... Government Printing Office

GPS ..... Global Positioning System

GRI ..... Group Repetition Interval

GVWR ..... Gross Vehicle Weight Rating

## H

HDG ..... Heading

HIN ..... Hull Identification Number

Hrd ..... Hard

ht ..... Height

## I

I ..... Interrupted

ICOMIA .... International Council of Marine Industry Associations

ICW ..... Intracoastal Waterway

IMP CHAR Aid not displaying characteristics as advertised in *Light List* or Chart

IMVO ..... Intergovernmental Marine Consultive Organization

IP ..... Immediate Past Office

Irreg ..... Irregular Light

IS ..... Information Systems

ISO ..... Isophase (equal interval)

IT ..... Instructor

## K

kHz ..... Kilohertz

## L

L, Lat ..... Latitude

L ..... Legal

LB ..... Lighted Buoy

LBB ..... Lighted Bell Buoy

LCD ..... Liquid Crystal Display

LCDR ..... Lieutenant Commander

LD ..... Least Depth



**LED** ..... Light Emitting Diode  
**LF** ..... Low Frequency  
**LFl** ..... Long Flash  
**LGB** ..... Lighted Gong Buoy  
**LH** ..... Light House  
**LHB** ..... Lighted Horn Buoy  
**LLNR/LLP** *Light List Number/  
Light List Page*  
**LM** ..... Life Member  
**LNB** ..... Large Navigation  
Buoy  
**LNm** ..... Local Notices to  
Mariners  
**Lo** ..... Longitude  
**LOP** ..... Line of Position  
**LORAN** .... Long Range Naviga-  
tion  
**LT** ..... Lieutenant (USCG,  
USN)  
**lt** ..... Light  
**LTC** ..... Lieutenant Colonel  
(USA)  
**LTCOL** .... Lieutenant Colonel  
(USAF, USMC)  
**LTG** ..... Lieutenant General  
(USA)  
**LTGEN** .... Lieutenant General  
(USAF, USMC)  
**LTJG** ..... Lieutenant (Junior  
Grade) (USCG,  
USN)  
**LWB** ..... Lighted Whistle  
Buoy

## M

**M** ..... Magnetic  
**M Board** .... Maneuvering Board  
**m** ..... Meters  
**M** ..... Miles (nautical)  
**M** ..... Mud  
**M/V** ..... Motor Vessel  
**MA** ..... Materials

**mag** ..... Magnetic  
**MAJ** ..... Major (USA)  
**MAJGEN** .. Major General  
(USAF, USMC)  
**MARS** ..... Navy-Marine Corps  
Military Affiliate  
Radio System  
**MG** ..... Major General  
(USA)  
**MHW** ..... Mean High Water  
**MHz** ..... Megahertz  
**mi** ..... Miles (statute)  
**MLLW** ..... Mean Lower Low  
Water  
**MLW** ..... Mean Low Water  
**Mo** ..... Morse Code  
**Mon** ..... Monument  
**MPG** ..... Miles Per Gallon  
**MPP** ..... Most Probable Posi-  
tion  
**MR** ..... Member Resources  
**MSC** ..... Marine Safety Coun-  
cil  
**MSD** ..... Marine Sanitation  
Device  
**MT** ..... Member Training

## N

**N** ..... North  
**N** ..... Nun  
**N-A** ..... Administrative As-  
sistant, National  
Commodore's Staff  
**N-AS** ..... National Commo-  
dore's Secretary  
**N-D** ..... National Commo-  
dore's Aide  
**N-S** ..... Special Assignment  
Officer, National  
Commodore's Staff  
**N-SPO** ..... Special Projects  
Officer, National  
Commodore's Staff

NACO ..... National Com-  
modore

NACON ..... National Auxil-  
iary Conference

NAEXCOM  
..... National Executive  
Committee

NAPDIC .... Past District Com-  
modore's Associa-  
tion

NARCO .... National Rear Com-  
modore

NASBLA ... National  
Associa-  
tion of  
S t a t e  
Boating Law Admin-  
istrators

NATL ..... National

NAVAID .... Navigation Aid  
(ATON)

NAVCO .... National Vice Com-  
modore

NAVRULES  
..... Navigation Rules  
(COLREGS)

NBF ..... National Boating  
Federation

NBSAC ..... National Boating  
Safety Advisory  
Council (BSAC)

NBSS ..... National Boating  
Safety School

NE ..... Northeast

NESBAC ... North Eastern States  
Boat Administrators  
Conference

NFPA ..... National Fire Protec-  
tion Association

NIPCO ..... Immediate Past Na-  
tional Commodore

NM ..... Nautical Miles

NM ..... Notices to Mariners



NACO

NOAA ..... National Oceanic &  
Atmospheric  
Administration  
(Department of  
Commerce)



NOS ..... National Ocean Sur-  
vey (NOAA-Depart-  
ment of Commerce)

NSBC ..... National  
S a f e  
Boating  
Council



NSBW ..... National Safe Boat-  
ing Week

NSC ..... National Safety  
Council

NTSB ..... National Transporta-  
tion Safety Board

NU ..... North Up

NW ..... Northwest

NWS ..... National Weather  
Service (NOAA-De-  
partment of Com-  
merce)

## O

OBC ..... Outboard Boating  
Club

OBSC ..... Observed

Obstr ..... Obstruction

Oc ..... Occulting

OCMI ..... Officer-in-Charge,  
Marine Inspection

OCS ..... Officer Candidate  
School


ODAS ..... Anchored Oceano-  
graphic Data Buoy

OINC ..... Officer-in-Charge

OLAM ..... Officer Leadership &  
Management Course

OP ..... Operations  
 OP CONSTSLY  
 ..... Signal is on through-  
 out 24 hours  
 Or ..... Orange

## P

P .....  Past Officer (before  
 officer title acronym)  
 P ..... Pebbles  
 P, POS ..... Position  
 PA ..... Position Approximate  
 PA ..... Public Affairs  
 PATCOM .. Patrol Commander  
 PB ..... Publications  
 PD ..... Position Doubtful  
 PE ..... Public Education  
 PO ..... Petty Officer  
 PPI ..... Plan Position Indica-  
 tor

## Q

Q ..... Quick (flashing)  
 QE ..... Qualification Exam-  
 iner

## R

R ..... Red  
 R ..... Relative  
 R&D ..... Research and Devel-  
 opment  
 Ra ref ..... Radar reflector  
 RA ..... Radius of Action  
 RADAR .... Radio Detection and  
 Ranging  
 RADM ..... Rear Admiral  
 RB ..... Relative Bearing  
 RBn ..... Radiobeacon

RCO ..... District Rear Com-  
 modore

RDF ..... Radio Direction  
 Finder

RED INT ... Aid operating at a  
 less range/intensity  
 than stated in *Light  
 List*

REMAINS . Structure remains in  
 area, possibly still  
 standing, and the  
 search for the struc-  
 ture was unsucces-  
 sful or search is yet to  
 be made

## REMOVED

..... Old structure located  
 and removed

REP ..... Representative

Rep ..... Reported

RFI ..... Radio Frequency  
 Interference

RFIX ..... Running Fix

Rks ..... Rocks

rky ..... Rocky

RMP ..... Relative Motion Plot

RPM ..... Revolutions per  
 Minute

RTPS ..... Radar Transfer Plot-  
 ting Sheet

## S

S/M ..... Sand over Mud

S ..... Sand

s ..... Seconds

S ..... Set

S ..... South

S ..... Speed

SAR ..... Search and Rescue

SATNAV ... Satellite Navigation

SBLA ..... State Boating Law  
 Administrators




SC ..... Specialty Course  
 SCD ..... Secondary Coding Delay  
 SD ..... Sounding Doubtful  
 SE ..... Southeast  
 sec ..... Second  
 sec ..... Sector  
 2LT ..... Second Lieutenant (USA)  
 2ndLT ..... Second Lieutenant (USAF, USMC)  
 SESBAC .... Southeast States Boating Administrators Conference  
 sft ..... Soft  
 sh ..... Shells  
 SHU ..... Ship's Head Up  
 si ..... Silent  
 SMG ..... Speed Made Good  
 SNR ..... Signal-to-noise Ratio  
 SO ..... Division Staff Officer  
 SOA ..... Speed of Advance  
 SOG ..... Speed Over the Ground  
 SPM ..... Single Point Mooring Buoy  
 SR ..... Secretary/Records  
 SRM ..... Speed of Relative Motion  
 SRU ..... Search and Rescue Unit  
 SSG ..... Student Study Guide  
 STW ..... Speed Through the Water  
 SW ..... Southwest  
 sy, stk ..... Sticky

## T

T ..... time

T ..... true  
 TB ..... True Bearing  
 TCPA ..... Time of Closest Point of Approach  
 TD ..... Time Difference  
 TEMP ..... Temporarily Discontinued  
 TH ..... True Heading  
 TR ..... Track  
 TRLB ..... Temporarily replaced by lighted buoy  
 TRSB ..... Temporarily replaced by a smaller buoy  
 TRUB ..... Temporarily replaced by an unlighted buoy  
 TSD ..... Time Speed Distance  
 TTG ..... Time To Go  
 TVMDC .... True, Variation, Magnetic, Deviation, Compass

## U

Unexam .... Unexamined  
 UNKNOWN  
 ..... Failed to locate structure during a search of the area  
 USA ..... United States Army  
 USAF ..... United States Air Force  
 USC ..... United States Code  
 USCA ..... United States Code Annotated  
 USCG ..... United States Coast Guard   
 USCGA ..... United States Coast Guard Academy

## USCGAUX

..... United States Coast Guard Auxiliary



USCGR ..... United States Coast Guard Reserves

USMC ..... United States Marine Corps

USN ..... United States Navy

USPHS ..... United States Public Health Service

USPS ..... United States Power Squadron



## V

V ..... Variation

VADM ..... Vice Admiral

var ..... Variation

VAR ..... Velocity Along Route

VCO ..... District Vice Commodore

VCP ..... Division Vice Captain

VE ..... Vessel Examination

VE ..... Vessel Examiner

VFC ..... Flotilla Vice Commander

VHF ..... Very High Frequency

VMG ..... Velocity Made Good

VRM ..... Variable Range Marker

## W

W/P ..... Watching properly

W ..... West

W ..... White

WANCON .. Western Area National Conference

WESBAC .. Western States Boat Administrators Conference

WPT ..... Waypoint

## X

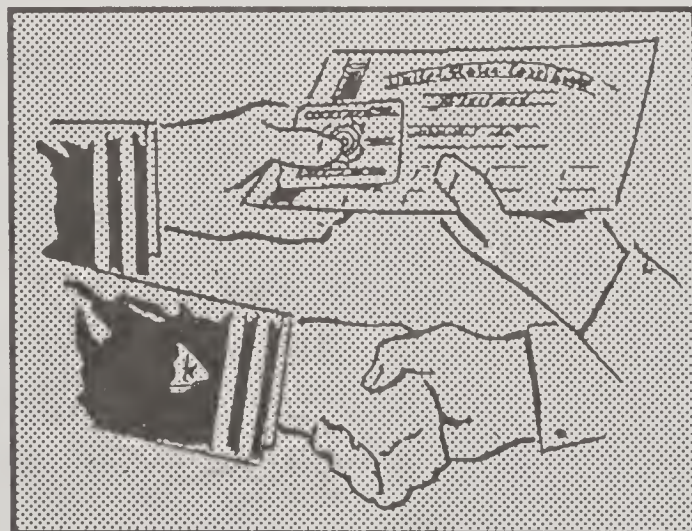
XTE ..... Cross Track Error

## Y

Y ..... Yellow

yd ..... Yards

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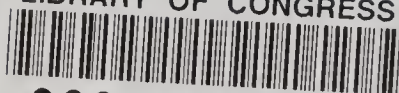
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